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Koeppel et al.

(54) SYSTEM AND METHOD FOR PERFORMING WEB BASED IN-VIEW MONITORING

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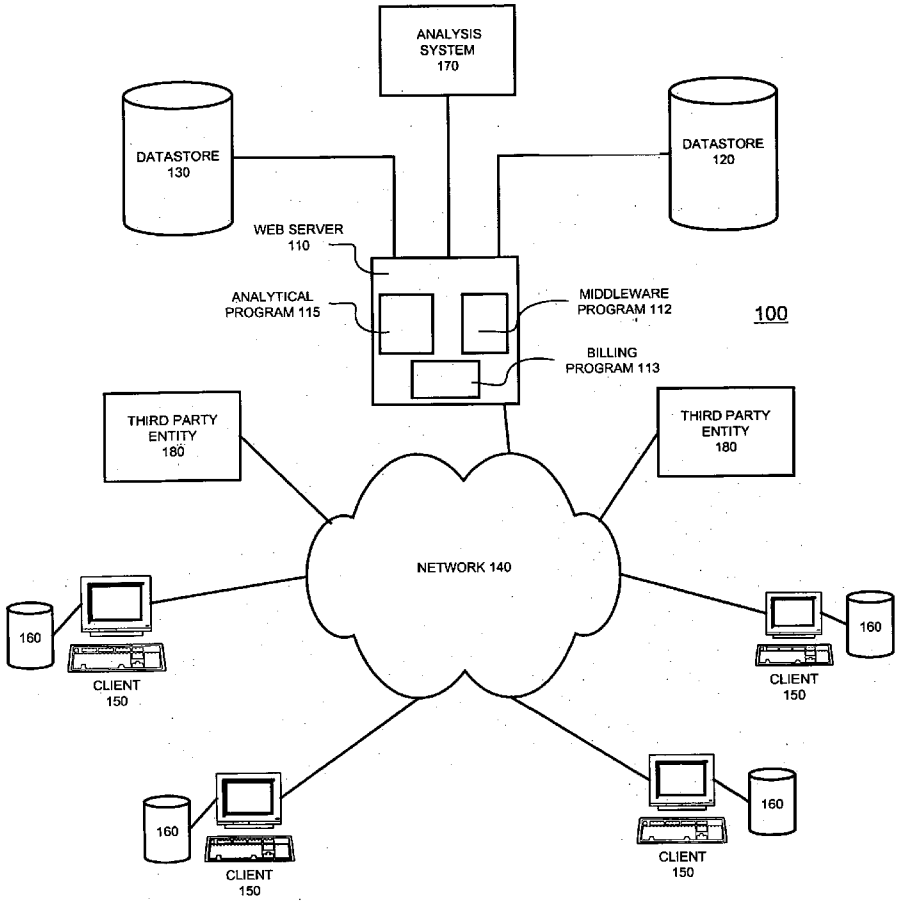
Publication Classification

(51) Int. Cl.[7] G06F 17/60

(52) U.S. Cl. 705/4

(57) **ABSTRACT**

Methods and apparatuses for performing dynamic Web-based market analysis are disclosed. A Web server presents a Web page including content to a user, via a browser located at the user's computer or workstation. The content in the Web page may be provided by third party entities that pay predetermined fees to have the Web server render their content in a Web page. While the user views the site, detailed user activities associated with the content, including in-view activities associated with viewable content in the Web page, are collected in a client side data store. After a trigger event occurs, such as the client side data store fills up, the collected data is sent back to the Web server where its is stored in a server side data store. An analytical program executed by the Web server retrieves the collected response data from the data store and performs market analysis on the collected response data. The analytical program produces results associated with the effectiveness of the content included the Web page. A middleware program, executing in the Web server, retrieves the result data and produces billing records, that may also include content effectiveness reports, and sends the billing records to respective third party entities that supplied the content for billing and marketing purposes.



Duration Media Ex-1006

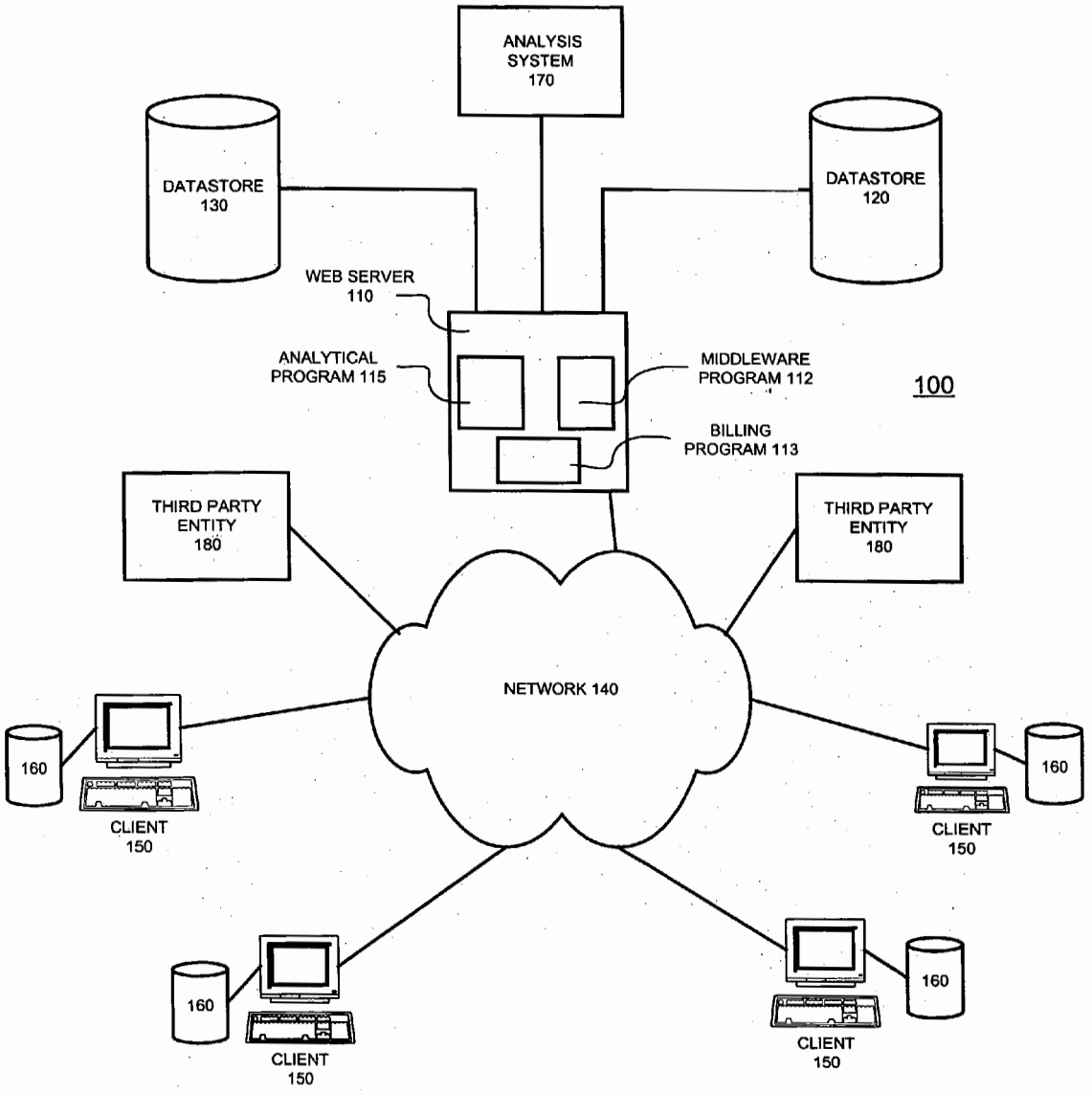


FIGURE 1

Duration Media Ex-1006

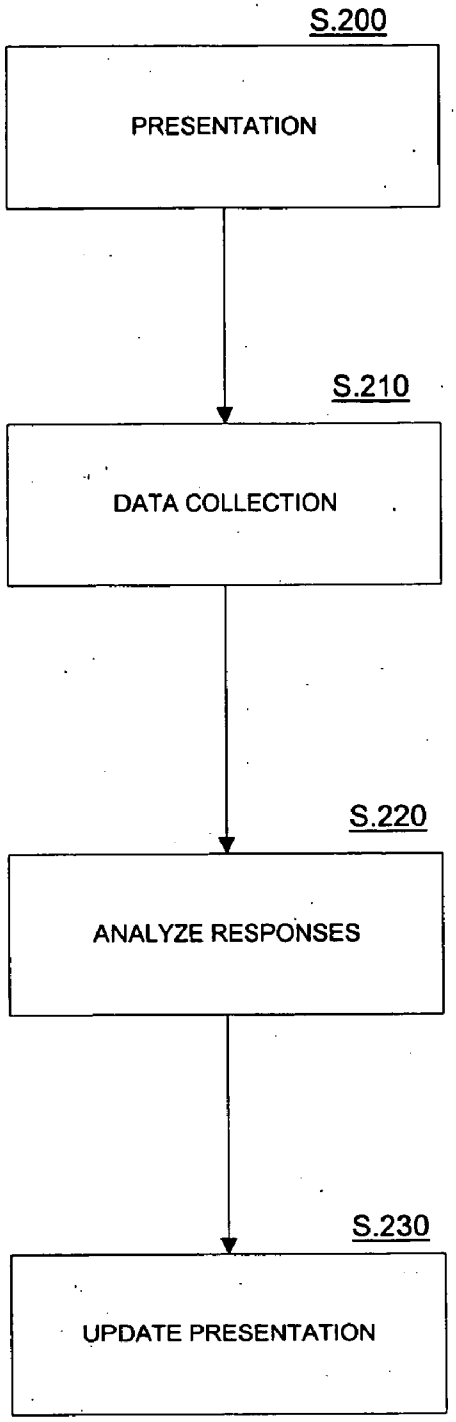

S.200
PRESENTATION
S.210
DATA COLLECTION
S.220
ANALYZE RESPONSES
S.230
UPDATE PRESENTATION

FIGURE 2

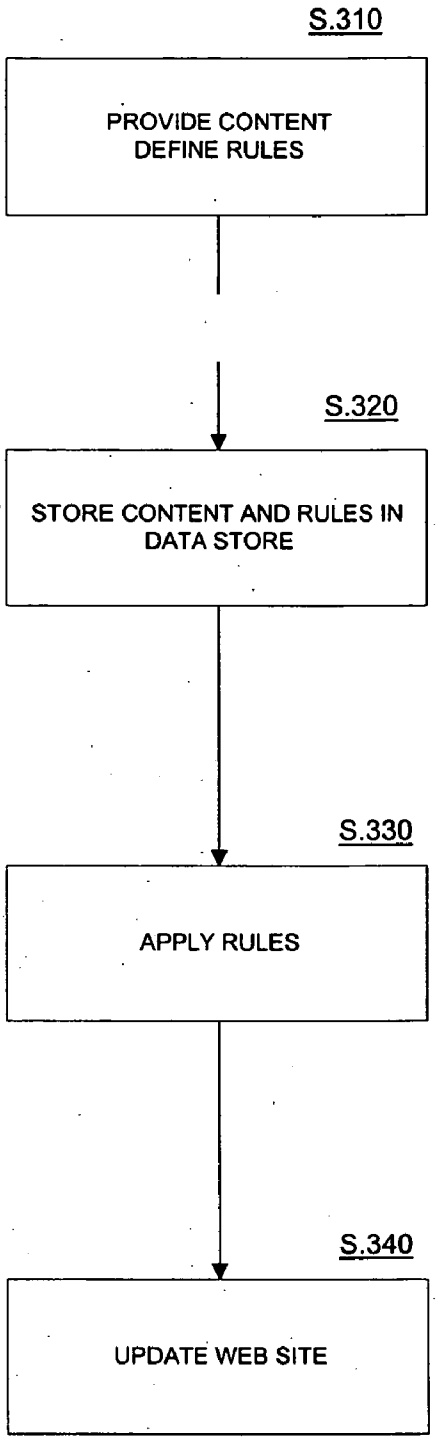

S.310
PROVIDE CONTENT
DEFINE RULES
S.320
STORE CONTENT AND RULES IN
DATA STORE
S.330
APPLY RULES
S.340
UPDATE WEB SITE

FIGURE 3

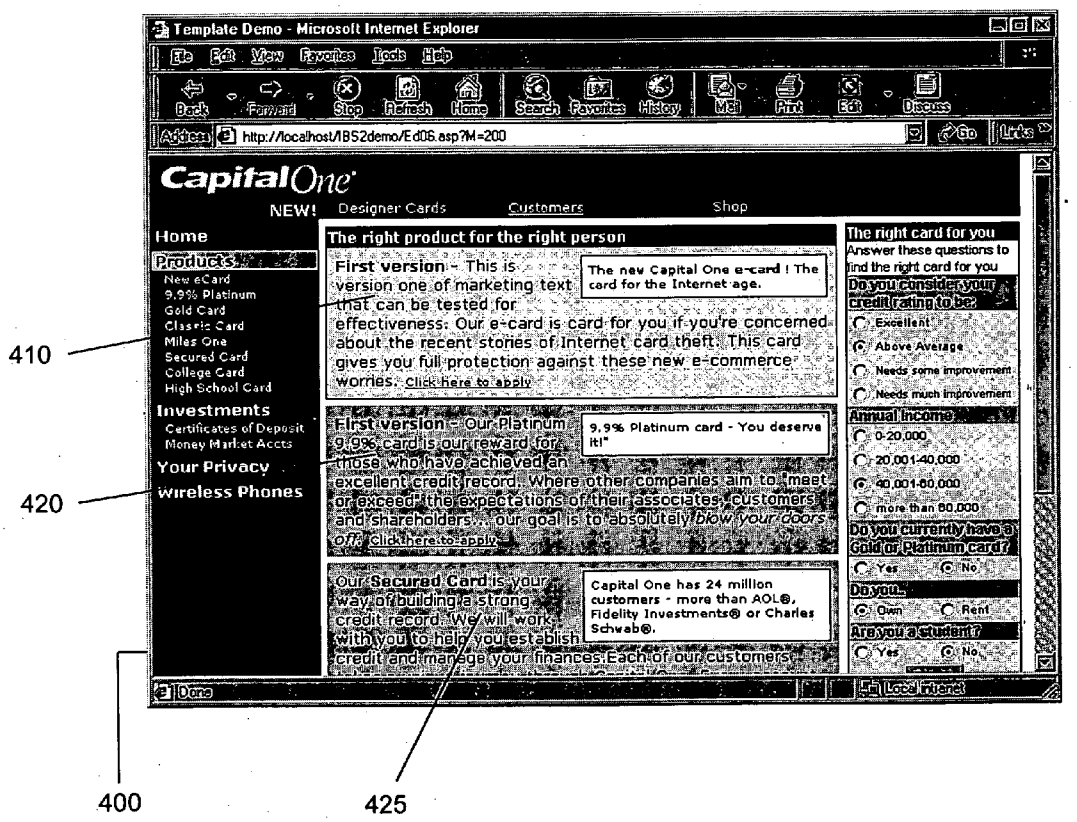

Template Demo - Microsoft Internet Explorer
http://localhost/IBS2demo/Ed06.asp?M=200
CapitalOne
NEW!
Designer Cards
Customers
Shop
Home
Products
New eCard
9.9% Platinum
Gold Card
Classic Card
Miles One
Secured Card
College Card
High School Card
Investments
Certificates of Deposit
Money Market Accts
Your Privacy
Wireless Phones
The right product for the right person
First version - This is version one of marketing text that can be tested for effectiveness. Our e-card is card for you if you're concerned about the recent stories of Internet card theft. This card gives you full protection against these new e-commerce worries. Click here to apply
The new Capital One e-card ! The card for the Internet age.
First version - Our Platinum 9.9% card is our reward for those who have achieved an excellent credit record. Where other companies aim to "meet or exceed the expectations of their associates, customers and shareholders"... our goal is to absolutely blow your doors off. Click here to apply
9.9% Platinum card - You deserve it!"
Our Secured Card is your way of building a strong credit record. We will work with you to help you establish credit and manage your finances. Each of our customers
Capital One has 24 million customers - more than AOL®, Fidelity Investments® or Charles Schwab®.
The right card for you
Answer these questions to find the right card for you
Do you consider your credit rating to be:
Excellent
Above Average
Needs some improvement
Needs much improvement
Annual Income
0-20,000
20,001-40,000
40,001-60,000
more than 60,000
Do you currently have a Gold or Platinum card?
Yes
No
Do you...
Own
Rent
Are you a student?
Yes
No
Done
Local intranet
410
420
400
425

FIGURE 4A

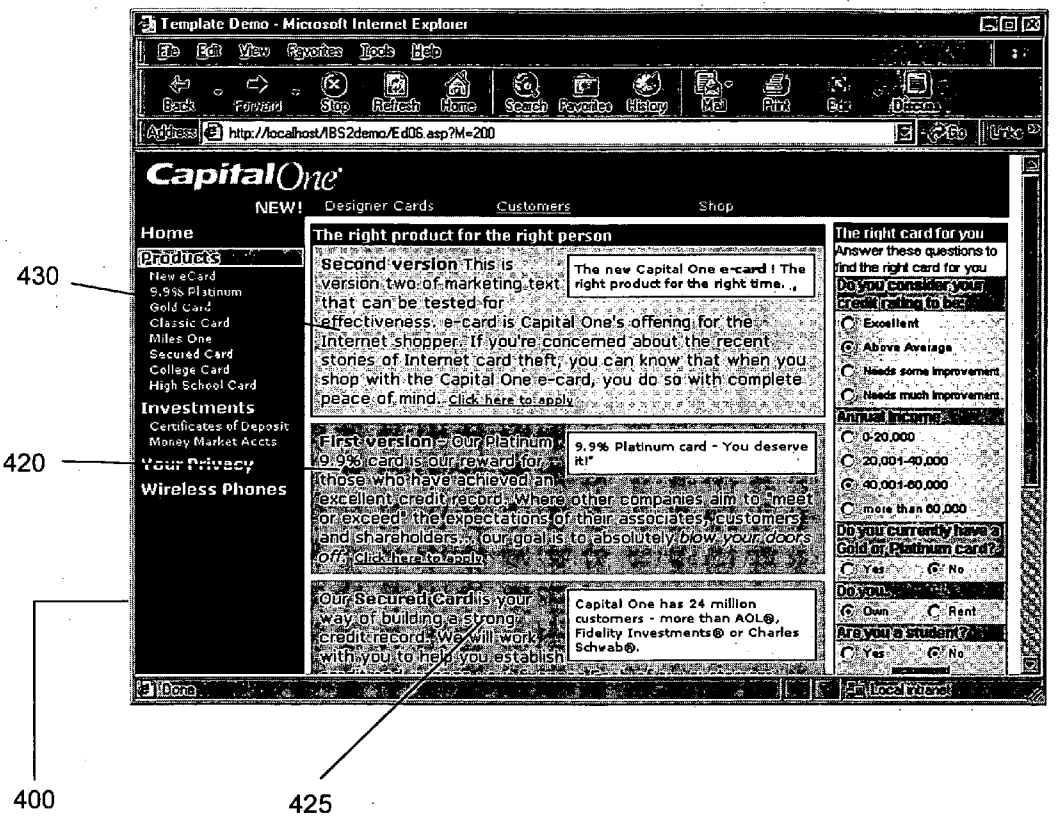
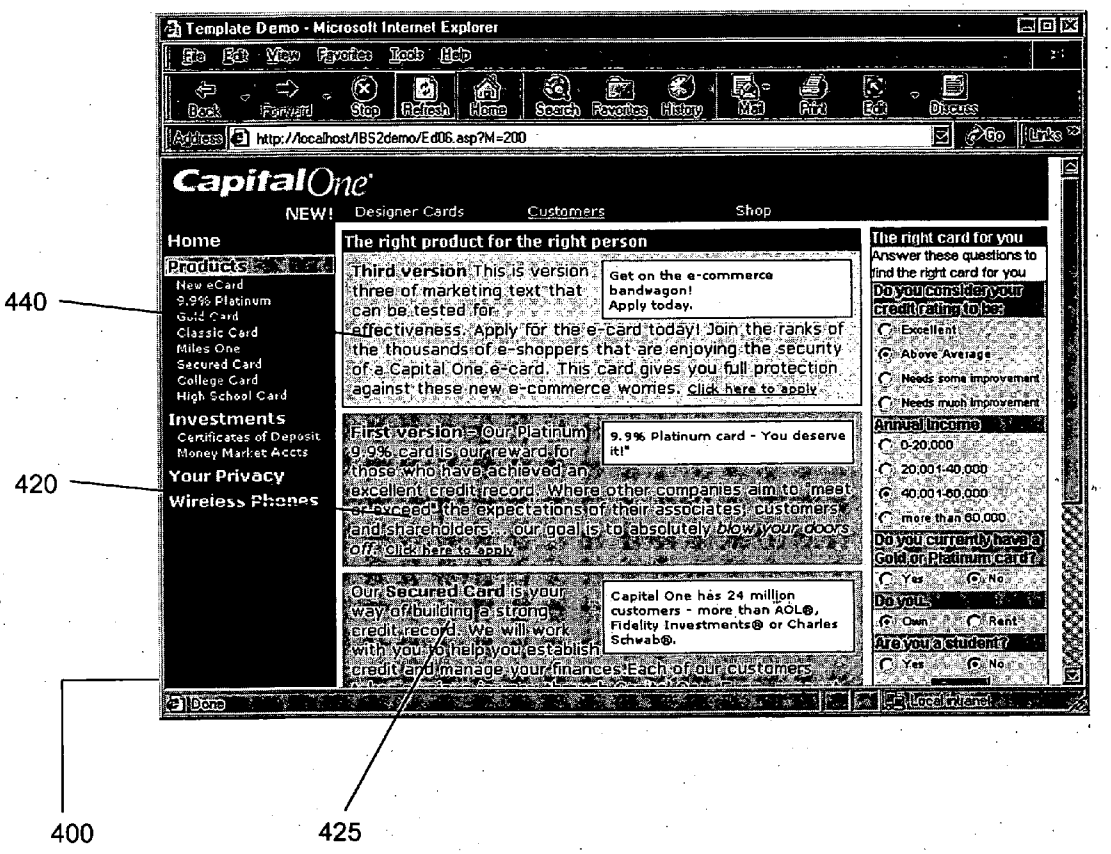

Template Demo - Microsoft Internet Explorer
File Edit View Favorites Tools Help
Back Forward Stop Refresh Home Search Favorites History Mail Print Edit Discuss
Address http://localhost/IBS2demo/Ed06.asp?M=200
Go Links
CapitalOne
NEW! Designer Cards Customers Shop
Home
Products
New eCard
9.9% Platinum
Gold Card
Classic Card
Miles One
Secured Card
College Card
High School Card
Investments
Certificates of Deposit
Money Market Accts
Your Privacy
Wireless Phones
The right product for the right person
Second version This is version two of marketing text that can be tested for effectiveness. e-card is Capital One's offering for the Internet shopper. If you're concerned about the recent stories of Internet card theft, you can know that when you shop with the Capital One e-card, you do so with complete peace of mind.. click here to apply
The new Capital One e-card ! The right product for the right time. ,
First version - Our Platinum 9.9% card is our reward for those who have achieved an excellent credit record. Where other companies aim to "meet or exceed" the expectations of their associates, customers and shareholders... our goal is to absolutely blow your doors off. click here to apply
9.9% Platinum card - You deserve it!"
Our Secured Card is your way of building a strong credit record. We will work with you to help you establish
Capital One has 24 million customers - more than AOL®, Fidelity Investments® or Charles Schwab®.
The right card for you
Answer these questions to find the right card for you
Do you consider your credit rating to be:
Excellent
Above Average
Needs some improvement
Needs much improvement
Annual Income
0-20,000
20,001-40,000
40,001-60,000
more than 60,000
Do you currently have a Gold or Platinum card?
Yes No
Do you...
Own Rent
Are you a student?
Yes No
Done
Local intranet
430
420
400
425

FIGURE 4B


Template Demo - Microsoft Internet Explorer
File Edit View Favorites Tools Help
Back Forward Stop Refresh Home Search Favorites History Mail Print Edit Discuss
Address http://localhost/IBS2demo/Ed06.asp?M=200
Go Links
CapitalOne
NEW! Designer Cards Customers Shop
Home
Products
New eCard
9.9% Platinum
Gold Card
Classic Card
Miles One
Secured Card
College Card
High School Card
Investments
Certificates of Deposit
Money Market Accts
Your Privacy
Wireless Phones
The right product for the right person
Third version This is version three of marketing text that can be tested for effectiveness. Apply for the e-card today! Join the ranks of the thousands of e-shoppers that are enjoying the security of a Capital One e-card. This card gives you full protection against these new e-commerce worries. Click here to apply
Get on the e-commerce bandwagon! Apply today.
First version - Our Platinum 9.9% card is our reward for those who have achieved an excellent credit record. Where other companies aim to "meet or exceed" the expectations of their associates, customers and shareholders... our goal is to absolutely blow your doors off. Click here to apply
9.9% Platinum card - You deserve it!"
Our Secured Card is your way of building a strong credit record. We will work with you to help you establish credit and manage your finances. Each of our customers
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The right card for you
Answer these questions to find the right card for you
Do you consider your credit rating to be:
Excellent
Above Average
Needs some improvement
Needs much improvement
Annual income
0-20,000
20,001-40,000
40,001-60,000
more than 60,000
Do you currently have a Gold or Platinum card?
Yes No
Do you:
Own Rent
Are you a student?
Yes No
Done
Local intranet
440
420
400
425

FIGURE 4C

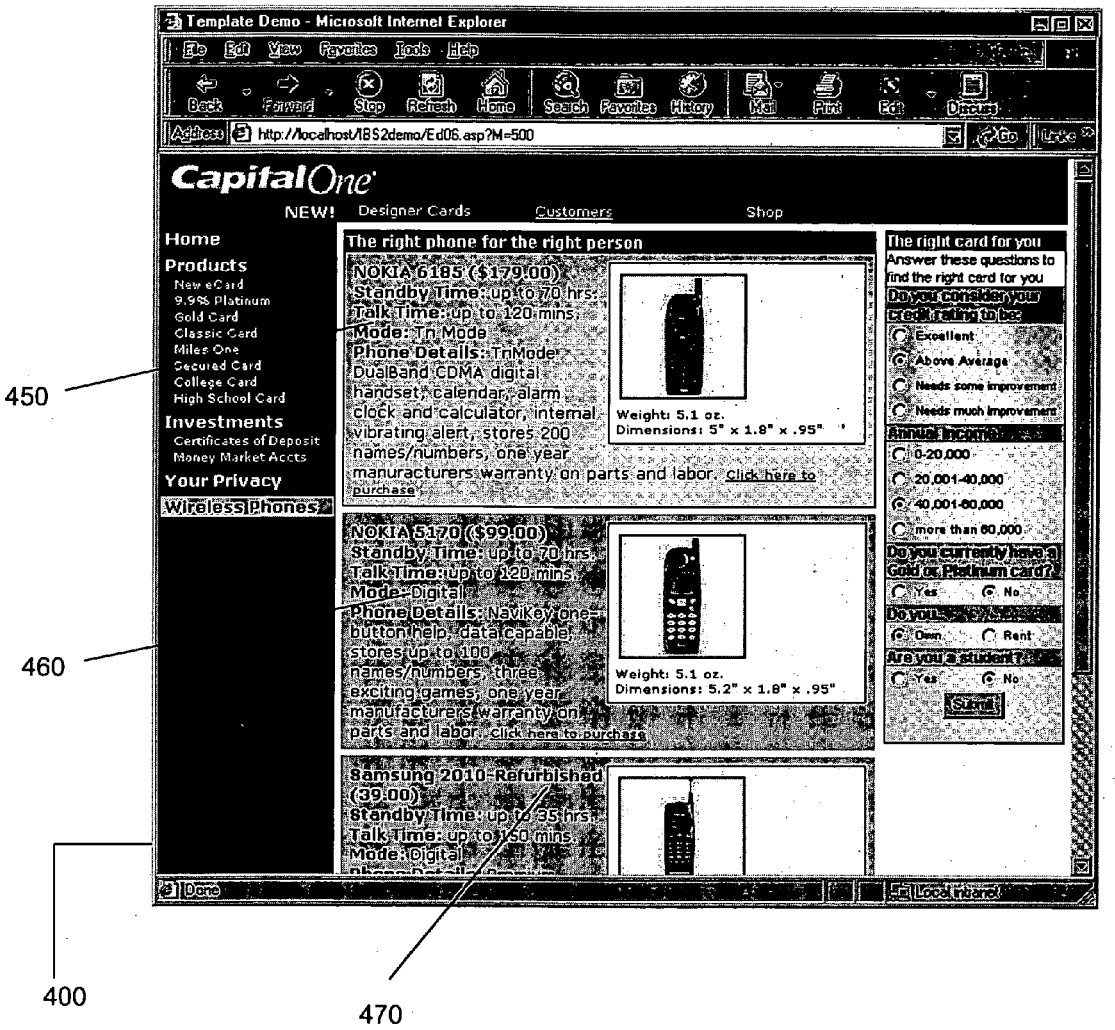

Template Demo - Microsoft Internet Explorer
File Edit View Favorites Tools Help
Back Forward Stop Refresh Home Search Favorites History Mail Print Edit Discuss
Address http://localhost/IBS2demo/Ed06.asp?M=500
Go Links
CapitalOne
NEW! Designer Cards Customers Shop
Home
Products
New eCard
9.9% Platinum
Gold Card
Classic Card
Miles One
Secured Card
College Card
High School Card
Investments
Certificates of Deposit
Money Market Accts
Your Privacy
Wireless Phones
The right phone for the right person
NOKIA 6185 ($179.00)
Standby Time: up to 70 hrs.
Talk Time: up to 120 mins.
Mode: Tri Mode
Phone Details: TriMode DualBand CDMA digital handset, calendar, alarm clock and calculator, internal vibrating alert, stores 200 names/numbers, one year manuracturers warranty on parts and labor. Click here to purchase
Weight: 5.1 oz.
Dimensions: 5" x 1.8" x .95"
NOKIA 5170 ($99.00)
Standby Time: up to 70 hrs.
Talk Time: up to 120 mins.
Mode: Digital
Phone Details: Navikey one-button help, data capable, stores up to 100 names/numbers, three exciting games, one year manufacturers warranty on parts and labor. click here to purchase
Weight: 5.1 oz.
Dimensions: 5.2" x 1.8" x .95"
Samsung 2010-Refurbished ($39.00)
Standby Time: up to 35 hrs.
Talk Time: up to 150 mins.
Mode: Digital
The right card for you
Answer these questions to find the right card for you
Do you consider your credit rating to be:
Excellent
Above Average
Needs some improvement
Needs much improvement
Annual Income
0-20,000
20,001-40,000
40,001-60,000
more than 60,000
Do you currently have a Gold or Platinum card?
Yes No
Do you
Own Rent
Are you a student?
Yes No
Submit
Done
Local intranet
450
460
400
470

FIGURE 4D

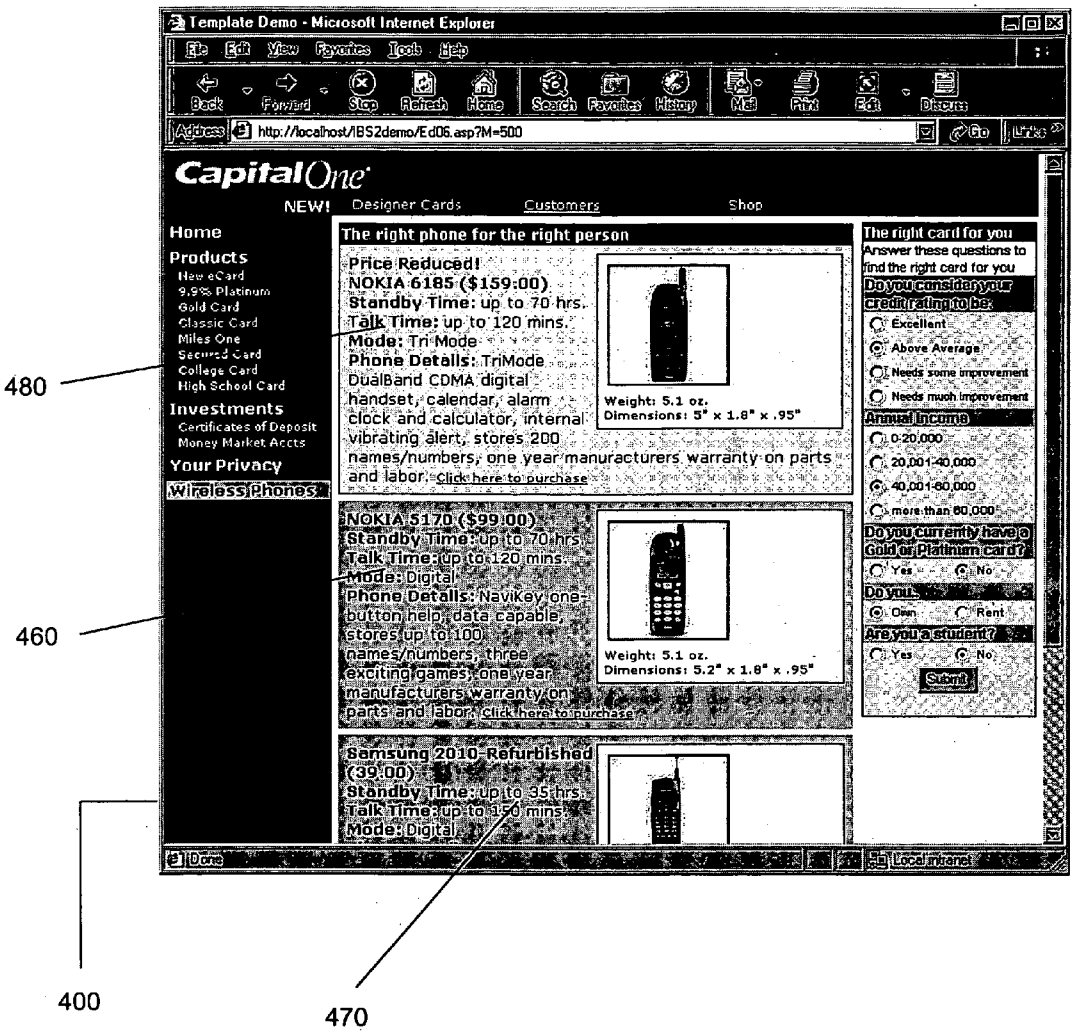

Template Demo - Microsoft Internet Explorer
File Edit View Favorites Tools Help
Back Forward Stop Refresh Home Search Favorites History Mail Print Edit Discuss
Address http://localhost/IBS2demo/Ed06.asp?M=500
Go Links
CapitalOne
NEW! Designer Cards Customers Shop
Home
Products
New eCard
9.9% Platinum
Gold Card
Classic Card
Miles One
Secured Card
College Card
High School Card
Investments
Certificates of Deposit
Money Market Accts
Your Privacy
Wireless Phones
The right phone for the right person
Price Reduced!
NOKIA 6185 ($159.00)
Standby Time: up to 70 hrs.
Talk Time: up to 120 mins.
Mode: Tri-Mode
Phone Details: TriMode DualBand CDMA digital handset, calendar, alarm clock and calculator, internal vibrating alert, stores 200 names/numbers, one year manuacturers warranty on parts and labor. Click here to purchase
Weight: 5.1 oz.
Dimensions: 5" x 1.8" x .95"
NOKIA 5170 ($99.00)
Standby Time: up to 70 hrs.
Talk Time: up to 120 mins.
Mode: Digital
Phone Details: Navikey one-button help, data capable, stores up to 100 names/numbers, three exciting games, one year manufacturers warranty on parts and labor. Click here to purchase
Weight: 5.1 oz.
Dimensions: 5.2" x 1.8" x .95"
Samsung 2010-Refurbished ($39.00)
Standby Time: up to 35 hrs.
Talk Time: up to 150 mins.
Mode: Digital
The right card for you
Answer these questions to find the right card for you
Do you consider your credit rating to be:
Excellent
Above Average
Needs some improvement
Needs much improvement
Annual Income
0-20,000
20,001-40,000
40,001-60,000
more than 60,000
Do you currently have a Gold or Platinum Card?
Yes No
Do you
Own Rent
Are you a student?
Yes No
Submit
Done
Local intranet
480
460
400
470

FIGURE 4E

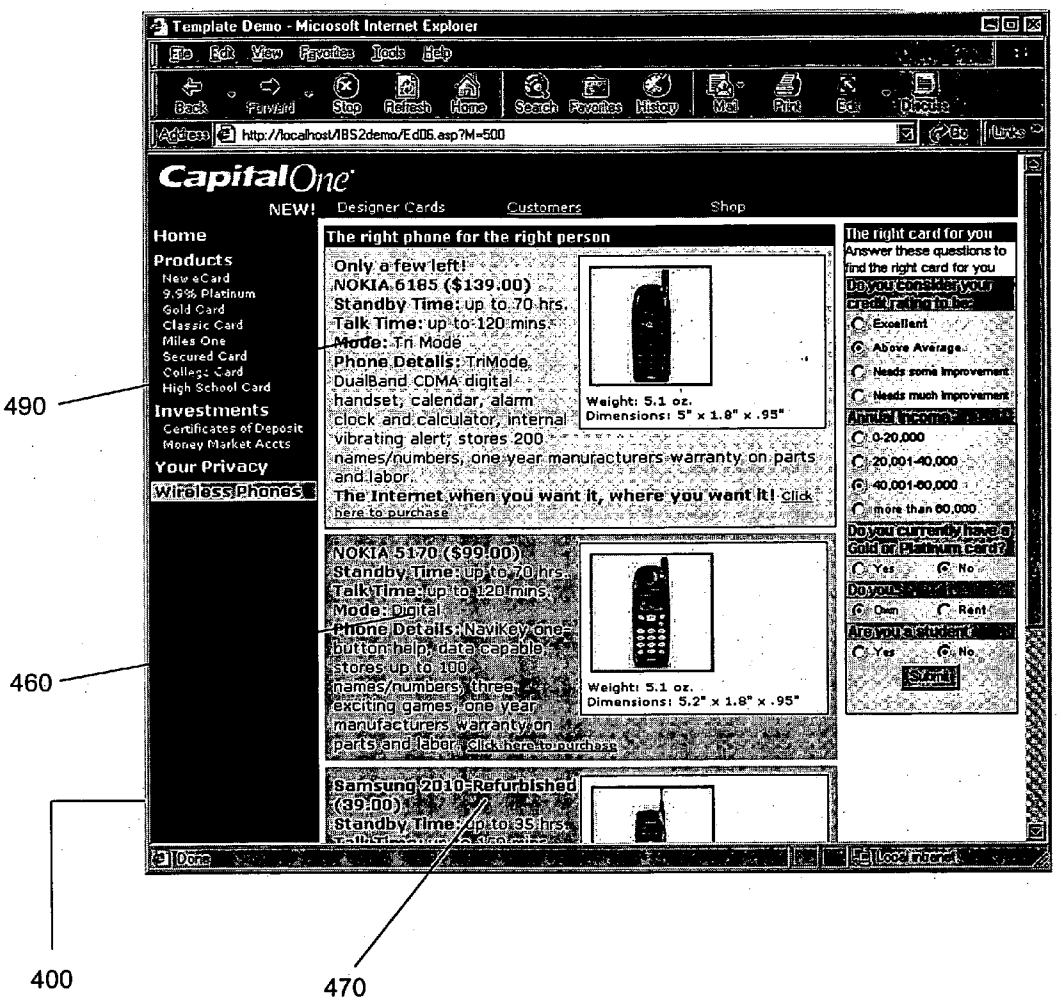
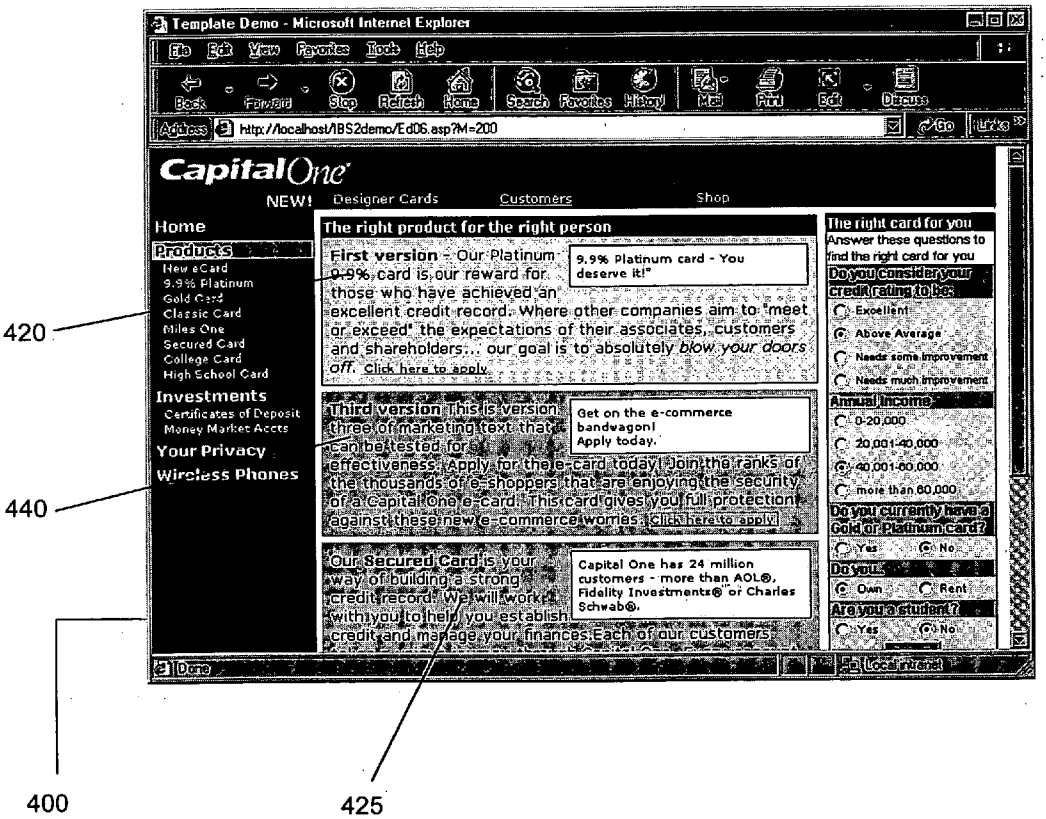

Template Demo - Microsoft Internet Explorer
File Edit View Favorites Tools Help
Back Forward Stop Refresh Home Search Favorites History Mail Print Edit Discuss
Address http://localhost/IBS2demo/Ed06.asp?M=500
CapitalOne
NEW! Designer Cards Customers Shop
Home
Products
New eCard
9.9% Platinum
Gold Card
Classic Card
Miles One
Secured Card
College Card
High School Card
Investments
Certificates of Deposit
Money Market Accts
Your Privacy
Wireless Phones
The right phone for the right person
Only a few left!
NOKIA 6185 ($139.00)
Standby Time: up to 70 hrs.
Talk Time: up to 120 mins.
Mode: Tri Mode
Phone Details: TriMode DualBand CDMA digital handset, calendar, alarm clock and calculator, internal vibrating alert, stores 200 names/numbers, one year manuracturers warranty on parts and labor.
The Internet when you want it, where you want it! Click here to purchase
Weight: 5.1 oz.
Dimensions: 5" x 1.8" x .95"
NOKIA 5170 ($99.00)
Standby Time: up to 70 hrs.
Talk Time: up to 120 mins.
Mode: Digital
Phone Details: Navikey one-button help, data capable, stores up to 100 names/numbers, three exciting games, one year manufacturers warranty on parts and labor. Click here to purchase
Weight: 5.1 oz.
Dimensions: 5.2" x 1.8" x .95"
Samsung 2010-Refurbished ($39.00)
Standby Time: up to 35 hrs.
The right card for you
Answer these questions to find the right card for you
Do you consider your credit rating to be:
Excellent
Above Average
Needs some improvement
Needs much improvement
Annual Income
0-20,000
20,001-40,000
40,001-60,000
more than 60,000
Do you currently have a Gold or Platinum Card?
Yes No
Do you
Own Rent
Are you a student?
Yes No
Start
Done
Local intranet
490
460
400
470

FIGURE 4F


Template Demo - Microsoft Internet Explorer
File Edit View Favorites Tools Help
Back Forward Stop Refresh Home Search Favorites History Mail Print Edit Discuss
Address http://localhost/IBS2demo/Ed06.asp?M=200
Go Links
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NEW! Designer Cards Customers Shop
Home
Products
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Gold Card
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Miles One
Secured Card
College Card
High School Card
Investments
Certificates of Deposit
Money Market Accts
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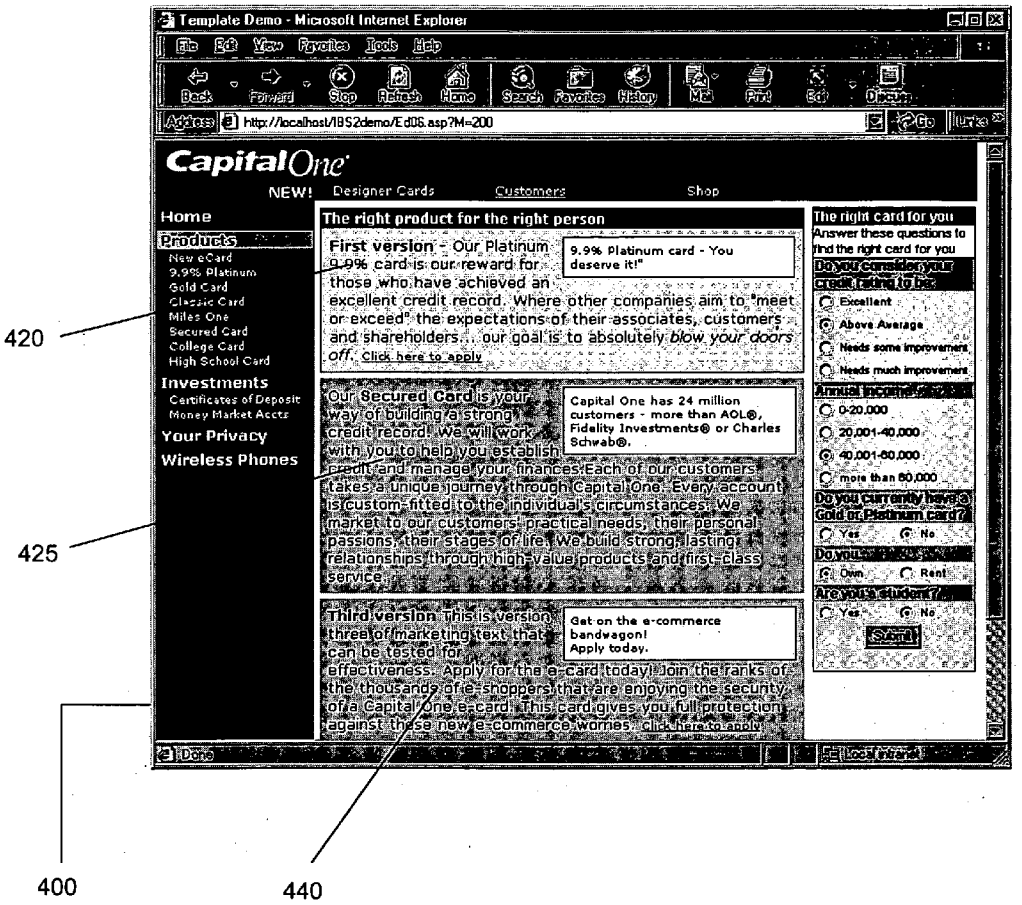
Wireless Phones
The right product for the right person
First version - Our Platinum 9.9% card is our reward for those who have achieved an excellent credit record. Where other companies aim to "meet or exceed" the expectations of their associates, customers and shareholders... our goal is to absolutely blow your doors off. Click here to apply.
9.9% Platinum card - You deserve it!"
Third version - This is version three of marketing text that can be tested for effectiveness. Apply for the e-card today! Join the ranks of the thousands of e-shoppers that are enjoying the security of a Capital One e-card. This card gives you full protection against these new e-commerce worries. Click here to apply.
Get on the e-commerce bandwagon! Apply today.
Our Secured Card is your way of building a strong credit record. We will work with you to help you establish credit and manage your finances. Each of our customers
Capital One has 24 million customers - more than AOL®, Fidelity Investments® or Charles Schwab®.
The right card for you
Answer these questions to find the right card for you
Do you consider your credit rating to be:
Excellent
Above Average
Needs some improvement
Needs much improvement
Annual income:
0-20,000
20,001-40,000
40,001-60,000
more than 60,000
Do you currently have a Gold or Platinum card?
Yes No
Do you:
Own Rent
Are you a student?
Yes No
Done
Local intranet
420
440
400
425

FIGURE 4G


Template Demo - Microsoft Internet Explorer
File Edit View Favorites Tools Help
Back Forward Stop Refresh Home Search Favorites History Mail Print Edit Discuss
Address http://localhost/18S2demo/Ed06.asp?M=200
Go Links
CapitalOne
NEW! Designer Cards Customers Shop
Home
Products
New eCard
9.9% Platinum
Gold Card
Classic Card
Miles One
Secured Card
College Card
High School Card
Investments
Certificates of Deposit
Money Market Accts
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Wireless Phones
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9.9% Platinum card - You deserve it!"
Our Secured Card is your way of building a strong credit record! We will work with you to help you establish credit and manage your finances. Each of our customers takes a unique journey through Capital One. Every account is custom-fitted to the individual's circumstances. We market to our customers' practical needs, their personal passions, their stages of life. We build strong, lasting relationships through high-value products and first-class service.
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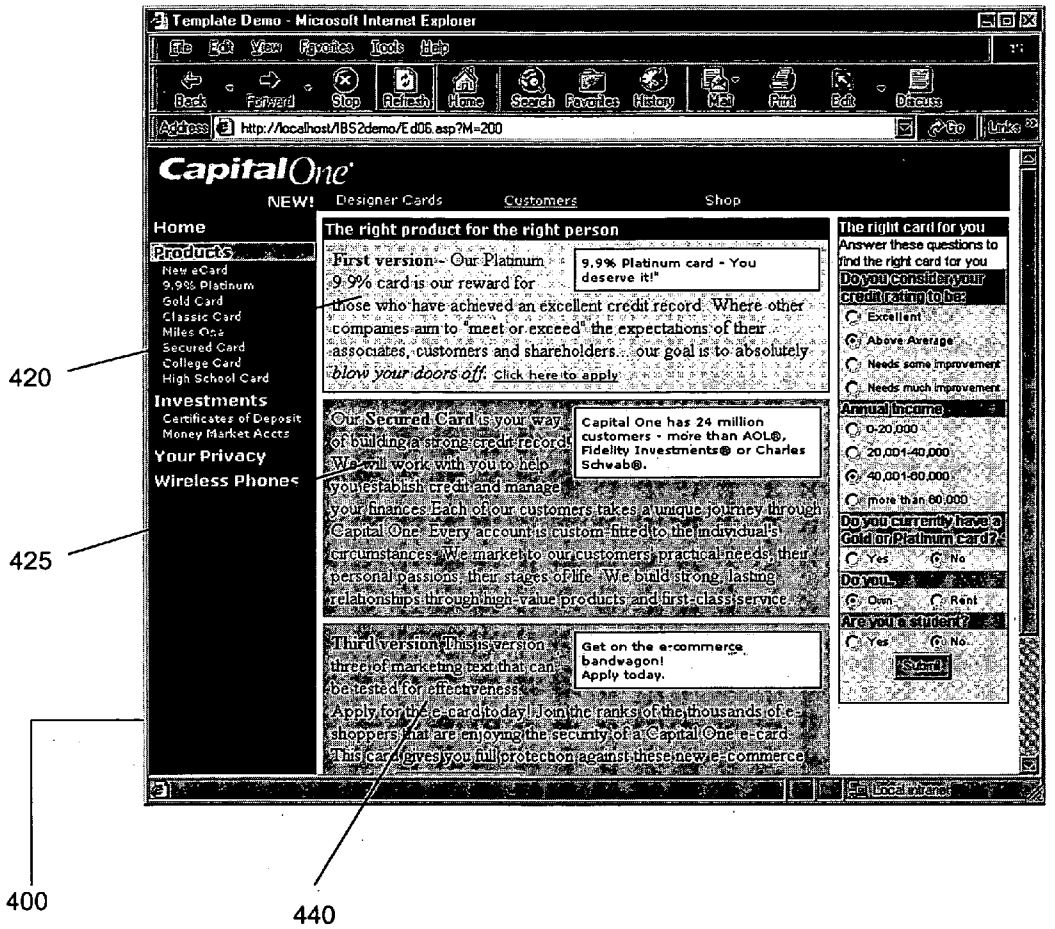
Get on the e-commerce bandwagon! Apply today.
The right card for you
Answer these questions to find the right card for you
Do you consider your credit rating to be:
Excellent
Above Average
Needs some improvement
Needs much improvement
Annual income:
0-20,000
20,001-40,000
40,001-60,000
more than 60,000
Do you currently have a Gold or Platinum card?
Yes No
Do you
Own Rent
Are you a student?
Yes No
Start!
Done
Local intranet
420
425
400
440

FIGURE 4H


Template Demo - Microsoft Internet Explorer
File Edit View Favorites Tools Help
Back Forward Stop Refresh Home Search Favorites History Mail Print Edit Discuss
Address http://localhost/IBS2demo/Ed06.asp?M=200
Go Links
CapitalOne
NEW! Designer Cards Customers Shop
Home
Products
New eCard
9.9% Platinum
Gold Card
Classic Card
Miles One
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High School Card
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Our Secured Card is your way of building a strong credit record. We will work with you to help you establish credit and manage your finances. Each of our customers takes a unique journey through Capital One. Every account is custom-fitted to the individual's circumstances. We market to our customers' practical needs, their personal passions, their stages of life. We build strong, lasting relationships through high-value products and first-class service.
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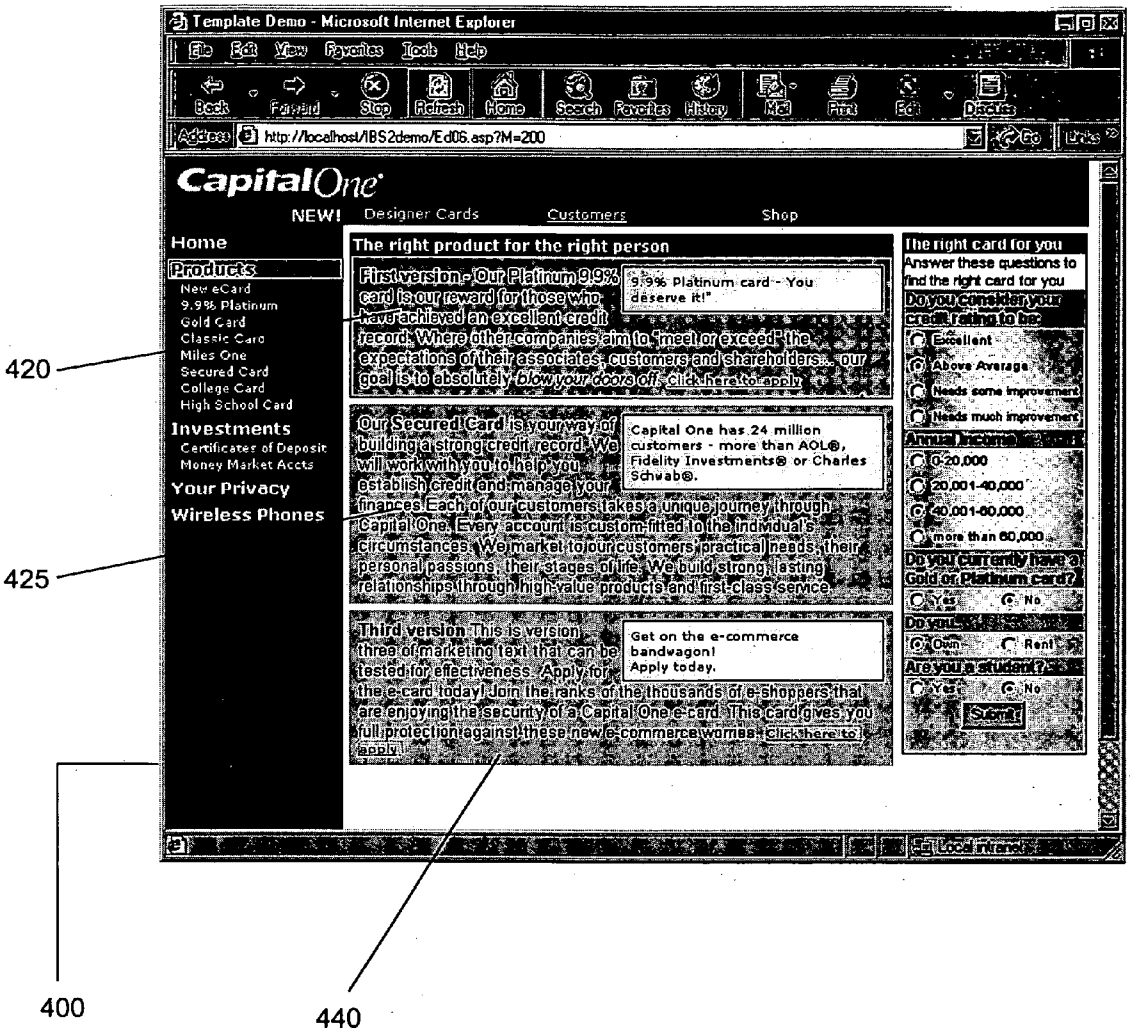
Third version. This is version three of marketing text that can be tested for effectiveness.
Apply for the e-card today! Join the ranks of the thousands of e-shoppers that are enjoying the security of a Capital One e-card. This card gives you full protection against these new e-commerce
Get on the e-commerce bandwagon! Apply today.
The right card for you
Answer these questions to find the right card for you
Do you consider your credit rating to be:
Excellent
Above Average
Needs some improvement
Needs much improvement
Annual Income
0-20,000
20,001-40,000
40,001-60,000
more than 60,000
Do you currently have a Gold or Platinum card?
Yes No
Do you...
Own Rent
Are you a student?
Yes No
Submit
Local intranet
420
425
400
440

FIGURE 4I



420

425

400

440

FIGURE 4J

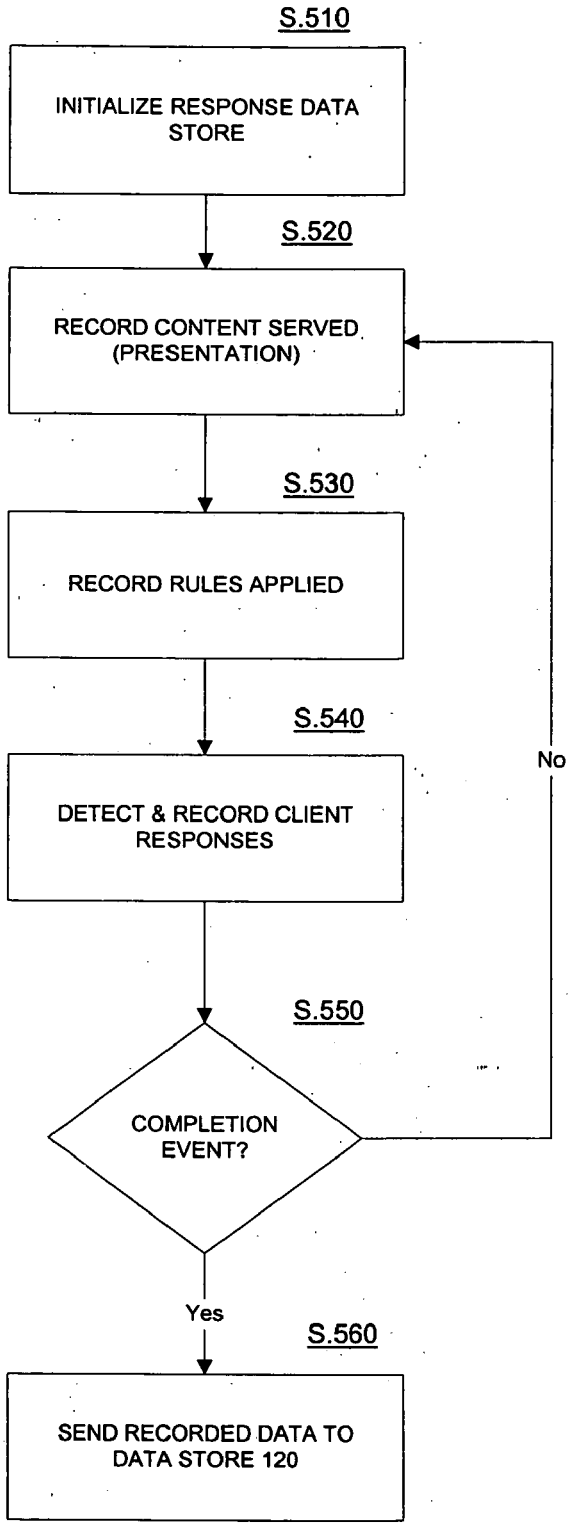

S.510
INITIALIZE RESPONSE DATA STORE
S.520
RECORD CONTENT SERVED (PRESENTATION)
S.530
RECORD RULES APPLIED
S.540
DETECT & RECORD CLIENT RESPONSES
S.550
COMPLETION EVENT?
No
Yes
S.560
SEND RECORDED DATA TO DATA STORE 120

FIGURE 5

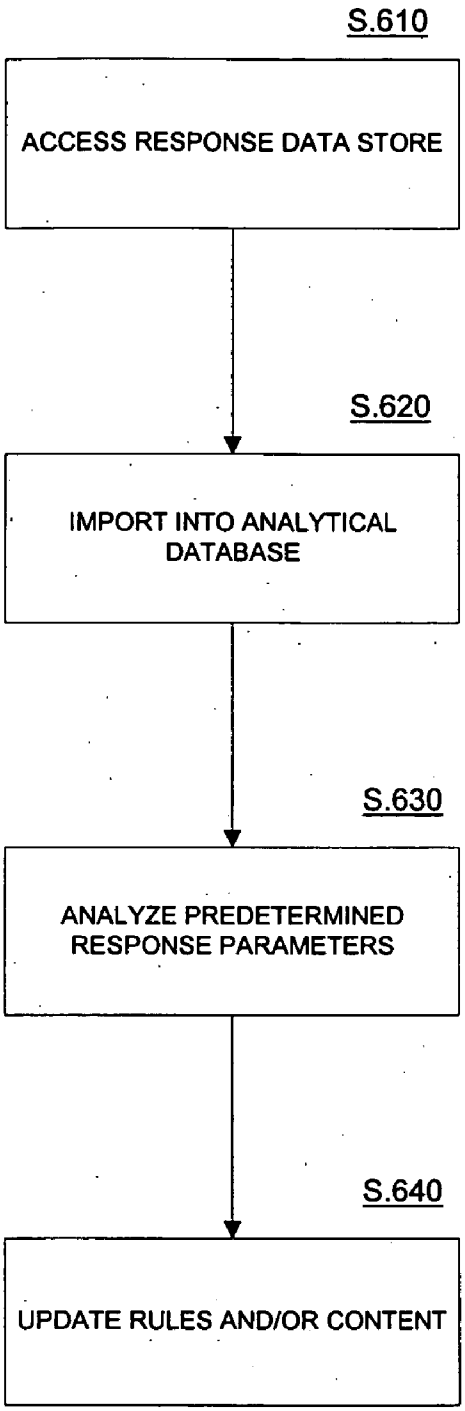

S.610
ACCESS RESPONSE DATA STORE
S.620
IMPORT INTO ANALYTICAL DATABASE
S.630
ANALYZE PREDETERMINED RESPONSE PARAMETERS
S.640
UPDATE RULES AND/OR CONTENT

FIGURE 6

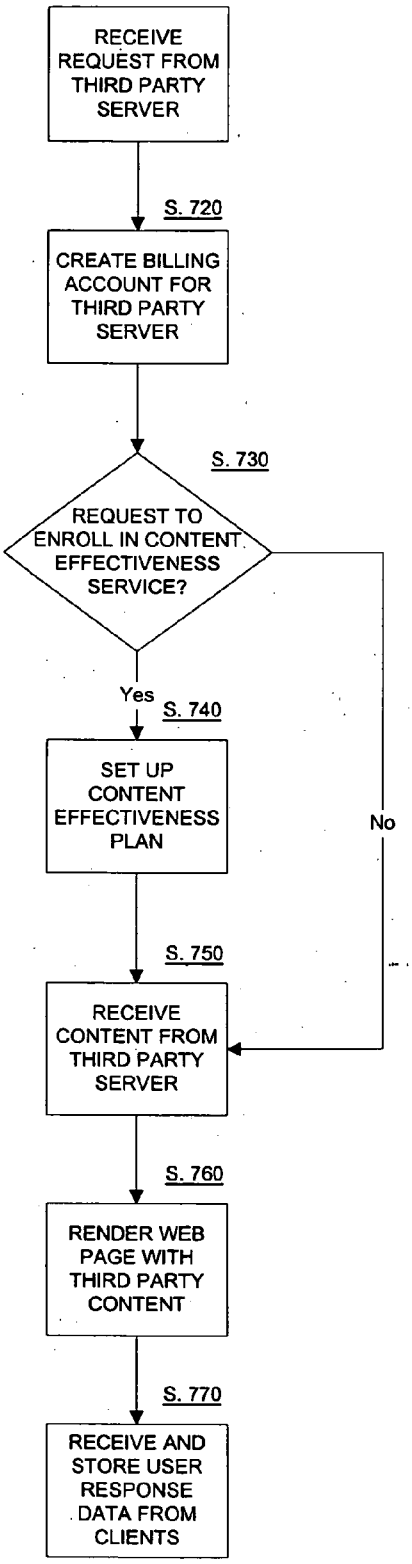

RECEIVE REQUEST FROM THIRD PARTY SERVER
S. 720
CREATE BILLING ACCOUNT FOR THIRD PARTY SERVER
S. 730
REQUEST TO ENROLL IN CONTENT EFFECTIVENESS SERVICE?
Yes
No
S. 740
SET UP CONTENT EFFECTIVENESS PLAN
S. 750
RECEIVE CONTENT FROM THIRD PARTY SERVER
S. 760
RENDER WEB PAGE WITH THIRD PARTY CONTENT
S. 770
RECEIVE AND STORE USER RESPONSE DATA FROM CLIENTS

FIGURE 7

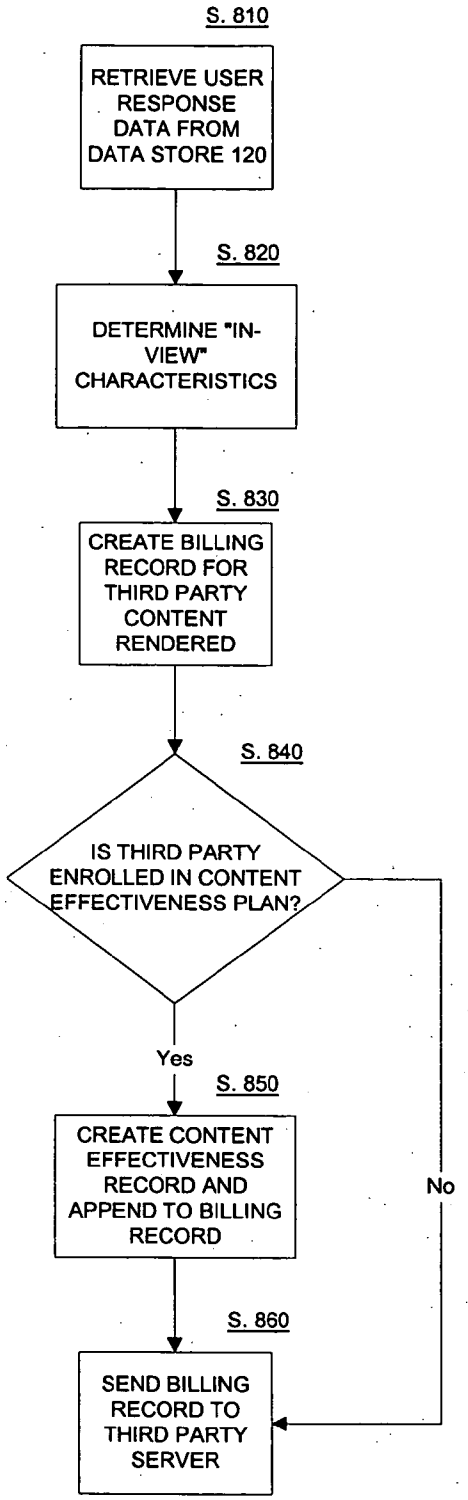

S. 810
RETRIEVE USER RESPONSE DATA FROM DATA STORE 120
S. 820
DETERMINE "IN-VIEW" CHARACTERISTICS
S. 830
CREATE BILLING RECORD FOR THIRD PARTY CONTENT RENDERED
S. 840
IS THIRD PARTY ENROLLED IN CONTENT EFFECTIVENESS PLAN?
Yes
No
S. 850
CREATE CONTENT EFFECTIVENESS RECORD AND APPEND TO BILLING RECORD
S. 860
SEND BILLING RECORD TO THIRD PARTY SERVER

FIGURE 8

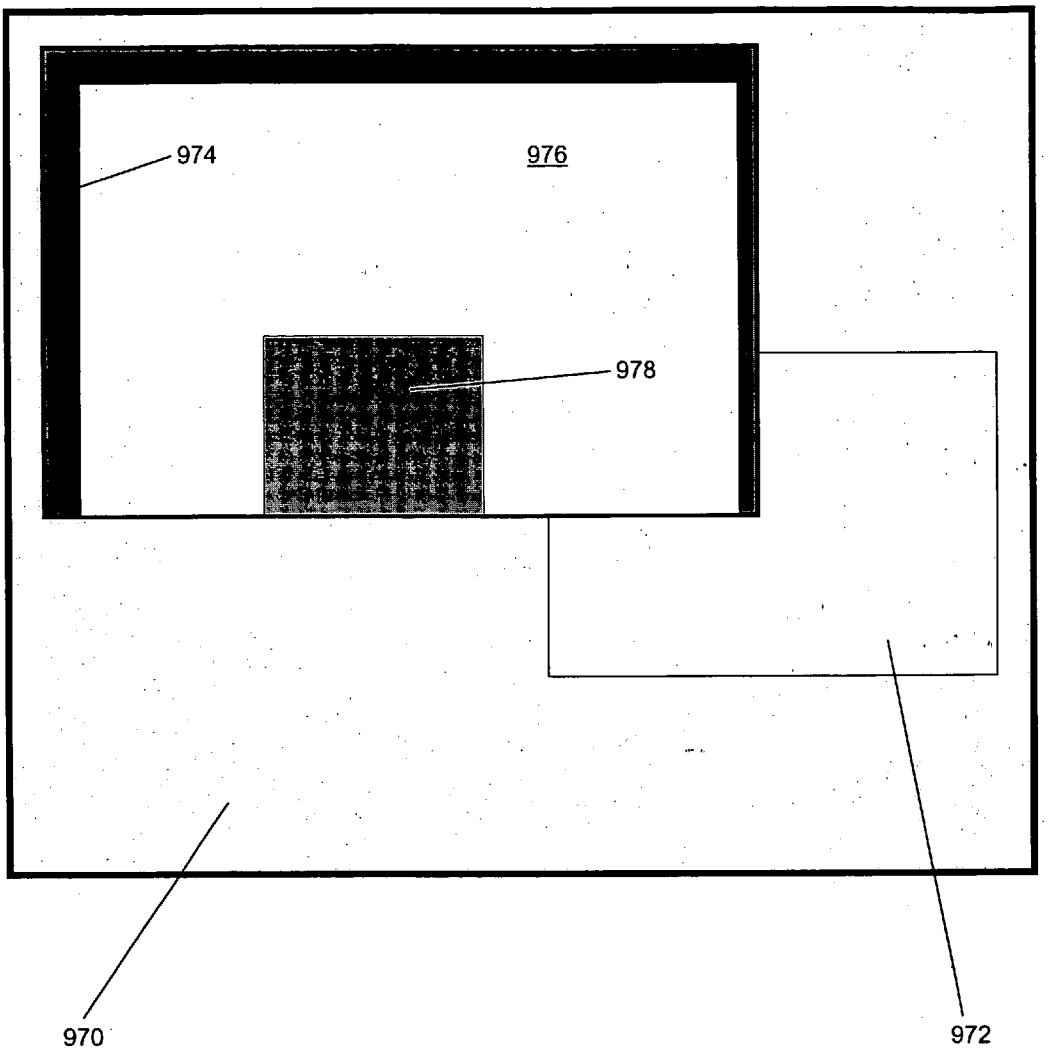


FIGURE 9A

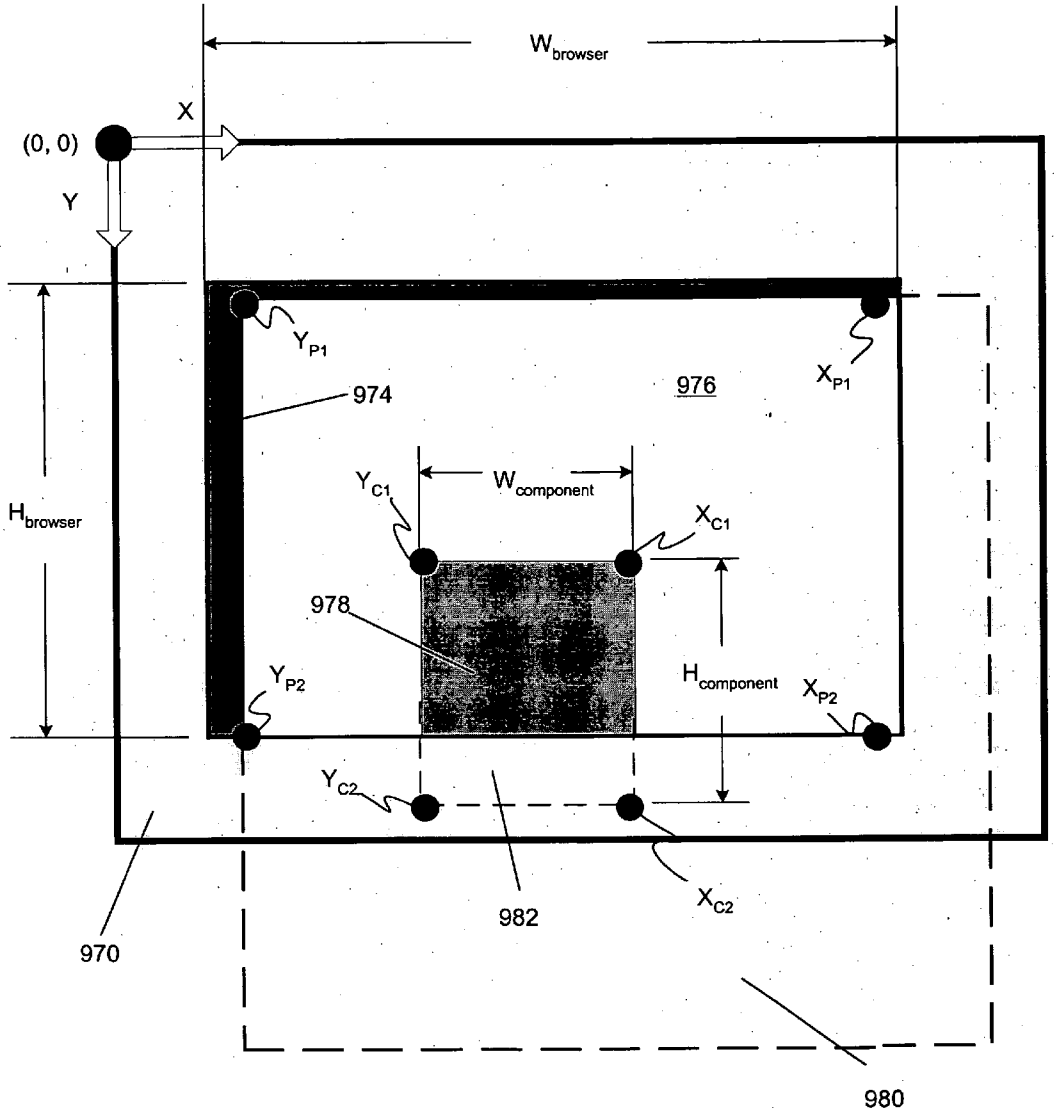

W browser
X
(0, 0)
Y
Y P1
X P1
974
976
Y C1
W component
X C1
H browser
978
Y P2
H component
X P2
Y C2
X C2
982
970
980

FIGURE 9B

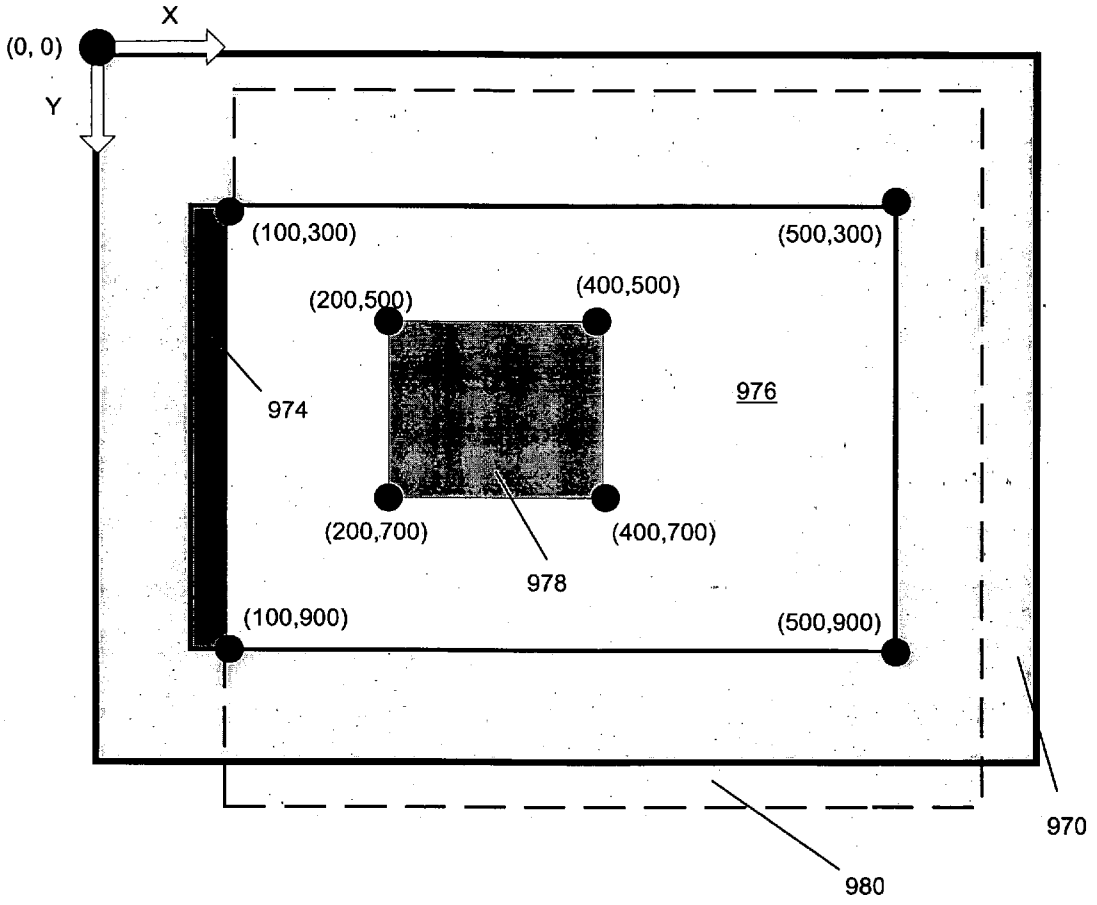

X
(0, 0)
Y
(100,300)
(500,300)
(200,500)
(400,500)
974
976
(200,700)
(400,700)
978
(100,900)
(500,900)
970
980

FIGURE 9C

SYSTEM AND METHOD FOR PERFORMING WEB BASED IN-VIEW MONITORING

CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] This application relates to the application, Attorney Docket No. 05793.3028.00000, entitled "SYSTEM AND METHOD FOR PERFORMING DYNAMIC WEB MARKETING AND ADVERTISING", filed concurrently with the present application, owned by the assignee of this application and expressly incorporated herein by reference in its entirety.

BACKGROUND OF THE INVENTION

[0002] 1. Field of the Invention

[0003] The present invention relates to Web based marketing and, more particularly, to a method and system for monitoring and collecting user responses to Web based content provided by Web servers.

[0004] 2. Background Information

[0005] On-line advertising and content provision has grown tremendously since the inception of the Internet and on-line services. Users can access a wide variety of information associated with their interests by using the Internet and accessing Web sites generated by providers. A computer equipped with a program called a browser, such as Netscape Navigator from Netscape Corporation, makes it a simple task to traverse the vast network of information available on the Internet and, specifically, its subpart known as the "World Wide Web."

[0006] The architecture of the Web follows a conventional client-server model. The terms "client" and "server" are used to refer to a computer's general role as a requester of data (the client) or provider of data (the server). Under the Web environment, Web browsers reside in clients and specially formatted "Web documents" reside on Internet (Web) servers. Web clients and Web servers communicate using a protocol called "Hyper Text Transfer Protocol" (HTTP). In operation, a browser opens a connection to a server and initiates a request for a document or a Web page including content. The server delivers the requested document or Web page, typically in the form coded in a standard "Hyper Text Markup Language" (HTML) format. After the document or Web page is delivered, the connection is closed and the browser displays the document or Web page to the user.

[0007] The Internet consists of a worldwide computer network that communicates using well defined protocol known as the Intertet Protocol (IP). Computer systems and servers that are directly connected to the Internet each have an unique address consisting of four numbers separated by periods such as "123.456.0.3". To simplify Internet addressing, a "Domain Name System" was created that allows users to access Internet resources with a simpler alphanumeric naming system. For example, the name "capitalone.com" is the name for a computer system or. Web server operated by Capital One®.

[0008] To further define the addresses of resources on the Internet, a Uniform Resource Locator system was created that uses a Uniform Resource Locator (URL) as a descriptor that specifically defines a type of Internet resource and its location. URLs have the following format: "resource-type://domain.address/path-name." The "resource-type" defines the type of Internet resource. Web documents, for example, are identified by the resource type "http", which indicates the protocol used to access the document.

[0009] To access a document on the Web, the user enters a URL for the Web document into a browser program executing on a client system with a connection to the Internet. The Web browser then sends a request in accordance with the HTTP protocol to the Web server that has the Web document using the URL. The Web server responds to the request by transmitting the requested object to the client. In most cases, the object is a plain text document containing text (in ASCII) that is written in HTML. Such objects often contain hyperlinks to other Web documents. The Web browser displays the HTML document on the screen for the user and the hyperlinks to other Web documents are emphasized in some fashion such that the user can select the hyperlink.

[0010] In some instances, the HTML document may contain data from more than one server. For example, remote text and images may be retrieved from remote servers and integrated into a Web document by a client system. One server may provide an image file, while another server may provide text information to the client system over a network such as the Internet. Different techniques are available to display these types of composite Web documents. For example, a program called a servlet executing on one of the servers may combine data from the various servers referenced in a selected Web document and transmit the composite Web document to the client. In other configurations, the client may utilize a program called an applet, which may . be transmitted to the client from one of the servers, to access the multiple servers offering parts of the composite and to build the composite Web document.

[0011] Generally, users view the content delivered in the Web pages and may select hyperlinks to other sub pages of a Web site, or to entirely different Web sites. Providers associate the users "browsing" these Web pages as potential consumers for the products and services they provide. By simply providing a Web server having information on a providers' product and service offerings and a customer database, and linking the Web server to the Web, providers may track user interactions with the Web server including visits, sales, buying trends and product/service preferences—all at the user level. Providers may then present or offer its customers with products and services they are most likely to buy-on an individual basis. For this reason alone most marketing professionals consider the Web to be one of the best direct marketing tools. In order to gain new, or retain existing, customers, providers need to ensure they present products and services that potential consumers are interested in. Accordingly, the importance of target advertising and target content provision has become an important role in the way providers conduct business over the Internet.

[0012] One conventional technique associated with target advertising is the use of advertising banners presented on existing Web pages generated by providers. When a user accesses a Web page associated with a provider, using a Web browser such as Netscape Navigator or Microsoft Internet Explorer, a banner advertising the provider's products or services appears on the Web page. This banner may be

presented by the Web page's provider, or may be provided by a third party advertisement server. When an interested user selects the advertisement (by "clicking through" on the banner) the user is generally forwarded to another Web page or site associated with the advertisement. This page or site may be the third party advertiser's home page. The success of the advertisement is based upon the user's response, in this case, the user "clicking through" the advertisement or banner, to receive more information on the content advertised.

[0013] Conventional implementations of target advertising attempt to present appropriate information, or advertisements, to selected users, such that the probability of that user being interested in the advertisement increases. These implementations monitor and collect limited user response information, along with information associated with the advertisement presented to the users. The user response information generally includes user identification data such as, user ID, domain type, location, employer information and other general information associated with the user. The advertisement information generally includes the particular advertisement presented, the number of times the advertisement was presented, the advertisements selected by a user, and the Web pages on which these advertisements were presented. User profiles may be created that associate user interests based on the types of advertisements and Web pages the users view. The collected information is analyzed to associate a success value with a particular advertisement based on the user information and the advertisement data. For example, a successful advertisement may be declared if the advertisement produced a sufficient number of "click throughs" from a plurality of users.

[0014] However, in the event an advertisement is not declared successful, new advertisements or banners may be presented to selected users, based upon their profile. For example, users interested in athletics or sports, based on their profile, may be targeted with advertisements associated with athletic apparel, while users interested in music may be presented with advertisements associated with available concert tickets or audio CDs.

[0015] Advertisements are adjusted by replacing the presented advertisement with another image/text object stored in a database. That is, when a target advertisement is to be changed, a replacement advertisement image/text object is retrieved from a database and positioned in the accessed Web page the previous advertisement was located. Accordingly, entire banners are replaced each time a new advertisement is needed to target a selected user. Furthermore, when the objects stored in the database are no longer effective, these objects must be modified and updated, which may take a significant amount of time.

[0016] Conventional implementations of target content provision for Web sites are also associated with the disadvantage of time consumption. The conventional techniques adjusting Web site renderings is a time consuming process which incorporates human intervention and an extreme amount of information. To evaluate the success of content presented on Web sites, the providers of the site generally collect user response data similar to that described above. That is, user information such as cookies, and general content information is monitored and collected. A database is created of this collected information, which includes massive amounts of data. The information is later analyzed either by an analytical engine, or through user intervention, and resultant data is created expressing the likelihood of successful content for various profiles of target users. Decisions are made on the type of content that should be provided, and the content is manually adjusted. This includes changing a Web site's presentation, or the content provided by the site, for example changing a loan percentage rate or incentives on a type of product for sale. This process can take days, weeks or sometimes months, depending upon the resources available to a provider.

[0017] Associated with the conventional implementations of on-line advertising is the billing process in which Web page providers charge advertising providers for allowing advertisements to be presented on the Web page. For example, advertisement banners displayed on Web pages served by a Web server are generally provided by third party advertisement servers. The provider of the Web server displaying the banners generally bill the advertisement servers for each rendering of a Web page that includes the advertisement banner. A disadvantage to this conventional process is that advertisement servers may be billed for banners that are never seen by a user browsing a rendered Web page that includes the banner. This may occur when the banners are located in positions on a Web page that rarely get viewed by users, such as the "bottom" half of a Web page. Users may leave a Web page without ever viewing the banner provided by an advertisement server, while the Web server serving the Web page may still charge the advertisement server for a banner being displayed on a rendered Web page.

[0018] Accordingly, although conventional on-line target advertising and content provision techniques allow adjustments to be made on downloaded documents in order to target selected users, they lack the ability to monitor and collect detailed user response data associated with content that is actually visible to the users when browsing the downloaded documents. Furthermore, although conventional on-line advertising techniques enable providers to advertise their products and services on third party Web sites, they lack the ability to efficiently perform detailed billing based on whether an advertisement was actually in-view when a Web site including the advertisement is rendered.

SUMMARY OF THE INVENTION

[0019] It is therefore desirable to have a method and system for monitoring and collecting detailed user in-view response data at client sites and passing the collected user response data to a Web server for marketing and billing analysis.

[0020] Methods, systems and articles of manufacture consistent with the present invention collect detailed user activity information while the users are accessing Web sites, and automatically adjust the content presented in the Web site to target selected users. The changes to the content can be very drastic, such as the entire site being completely adjusted, or very minute, such as the replacement of font in selected areas of the site.

[0021] In accordance with an embodiment of the invention, a Web server presents a Web page including content to a plurality of users, via a browser executing at each users'

client site. While the users view the page, detailed activities performed by each user, such as "click-throughs", screen scrolling, and mouse movements are collected in a client side data store using client side scripting, applets or similar means. After an event occurs, such as the client side data store fills up, a new URL is selected, the browser is closed, or a new Web page is selected, the collected activity data is sent back to the Web server where its is stored in a server side data store. A program executed by the Web server retrieves the collected response data from the data store and perform market analysis and produces results that reflect the success of the content presented on the Web page displayed to the users. These results are used by a second program executing on the Web server to update the content presented to the user, on a "real-time" and automatic basis. A third program performs a billing analysis on the results from the first program to determine whether the content was actually in-view to the users browsing the Web page that included the content. Results of the billing analysis are subsequently sent to a third party entity for processing.

[0022] Accordingly, the Web server can present targeted content to a user, or a group of users, based on rules associated with the users' profiles. The content can be dynamically adjusted, based on the rules, to present entirely different content or subtle differences, that may appeal to the users. Detailed user responses associated with the new content are monitored, and subsequent changes can be made by following the same process. Thus, the Web server performs closed loop "hands-free" market analysis on the effectiveness of rendered Web pages and allow the pages to be automatically altered for future testing and analysis.

[0023] Furthermore, the Web server may perform detailed billing analysis associated with the content such that third party entities may be billed for provided content on a more economical basis.

BRIEF DESCRIPTION OF THE DRAWINGS

[0024] The foregoing summary and the following detailed description should not restrict the scope of the claimed invention. Both provide examples and explanations to enable others to practice the invention. The accompanying drawings, which form part of the description of the invention, show several embodiments of the invention, and together with the description, explain the principles of the invention.

[0025] Accompanying Drawings

[0026] **FIG. 1** is an exemplary block diagram of a Web-based network, in accordance with methods and systems consistent with the invention;

[0027] **FIG. 2** is an exemplary flowchart of the steps performed by the Web-based network, in accordance with methods and systems consistent with the invention;

[0028] **FIG. 3** is an exemplary flow chart of the steps performed by the presentation step shown in **FIG. 2**, in accordance with methods and systems consistent with the invention;

[0029] **FIGS. 4A-4F** are examples of various types of content that can be rendered on a Web page, in accordance with methods and systems consistent with the invention;

[0030] **FIGS. 4G-4J** show the Web page displayed in **FIG. 4***c*, after predefined rules are applied to alter the content, in accordance with methods and systems consistent with the invention;

[0031] **FIG. 5** is an exemplary flow chart of the steps performed by the data collection step shown in **FIG. 2**, in accordance with methods and systems consistent with the invention;

[0032] **FIG. 6** is an exemplary flow chart of the steps performed by the analyze responses step shown in **FIG. 2**, in accordance with methods and systems consistent with the invention;

[0033] **FIG. 7** is an exemplary flow chart of the steps performed by a Web server during third party entity set-up procedures, in accordance with methods and systems consistent with the invention;

[0034] **FIG. 8** is an exemplary flow chart of the steps performed by a Web server during a third party in-view analysis and billing operation, in accordance with methods and systems consistent with the invention; and

[0035] **FIGS. 9A-9C** are exemplary block diagrams of a computer display rendering a Web page, in accordance with methods and systems consistent with the invention.

DETAILED DESCRIPTION

[0036] The following description of embodiments of this invention refers to the accompanying drawings. Where appropriate, the same reference numbers in different drawings refer to the same or similar elements.

[0037] In accordance with an embodiment of the invention, a network is configured such that users, located at respective client nodes equipped with browser software, request a Web page to be served to them from a Web server that resides on the Internet at a uniform resource locator. The Web server receives the requests and runs a predefined middleware program, which determines the marketing content to be placed on the requested Web page. The Web server then serves the page to the clients.

[0038] Upon receiving the Web page, each client enables the users to browse the content displayed on the page. The users' behavior in response to the displayed page is monitored at each client node, by capturing events such as mouse movements, scrolling, resizing the browser window, URL selections and/or other similar user initiated events. The captured events are sent back to the Web server in response to a detected client side trigger, and the captured event data is stored into a server side data store.

[0039] An analytical program, executing in the Web server analyzes the collected user event data to determine the effectiveness of the content presented on the Web page. A middleware program, executing in the Web server, determines the content to serve to the client nodes based on the analysis by the analytical program. When the Web server receives a subsequent request for the Web page, the Web server serves a modified Web page that includes modified content back to the client nodes as an updated Web page. The above described process is continuously repeated allowing the present invention to perform automatic analysis on the content presented on Web pages, and dynamically adjust the

content to target selected user groups, for the purposes of achieving marketing or advertising goals.

[0040] In an alternate embodiment of the invention, the detailed user monitoring and collection implementations performed by methods, systems and articles of manufacture consistent with the present invention may be applied to advertisement and content billing management. In accordance with such an alternate embodiment of the invention; a network is configured such that users, located at respective client nodes equipped with browser software, request a Web page to be served to them from a Web server that resides on the Internet at a uniform resource locator. The Web server receives the requests and runs a predefined middleware program, which determines the marketing content to be placed on the requested Web page. The marketing content may be associated with third party entities that pay fees to the provider of the Web server to have selected content included in the Web page served by the Web server. The Web server then serves the Web page to the clients.

[0041] Upon receiving the Web page, each client includes software that enable the users to browse the content displayed on the page. The users' behavior in response to the displayed page is monitored at each client node, by capturing events such as mouse movement, scrolling, resizing the browser window, URL selections or other similar detailed user initiated events. The captured events are sent back to the Web server in response to a detected client side trigger, and the captured event data is stored into a server side data store.

[0042] An analytical program, executing in the Web server, analyzes the collected-user event data to generate in-view characteristic result data associated with the user responses. In response to the result data, analytical program may update rules associated with selected content. A billing program, executing in the Web server, analyzes the in-view characteristic result data produced by the analytical program based on the determination, the billing program then generates billing records associated with content provided by third party entities and then sends the billing records to the appropriate third party entities. In addition to performing billing operations, the billing program may generate third party content effectiveness records indicating whether any changes to the third party content is needed, based on results produced by the analytical program. Billing program may send the effectiveness records to selected third party entities enrolled in an effectiveness service provided by the Web server, or the provider of the Web server, enabling the third party entities to obtain detailed marketing information related to the effectiveness of their third party content.

[0043] **FIG. 1** shows a block diagram of a network environment **100**, in which the features of the invention may be implemented. As shown, network environment **100** comprises of a Web server **110**, data store **120**, data store **130**, a network **140**, analysis system **170**, third party entities **180** and client nodes **150**. In addition, Web server **110** comprises of middleware program **112**, billing program **113** and analytical program **115**.

[0044] Web server **110** may be implemented through a desktop computer, workstation or any other Web server system known in the art. Web server **110** may be equipped with Web server software such as, Microsoft Internet Information Server, Novell Web Server, Netscape Enterprise Server, or any other Web server software known in the art.

[0045] Client nodes **150** may include a desktop computer, workstation, laptop, personal digital assistant or any other similar client side system known in the art. Client nodes **150** are equipped with browser software such as Netscape Navigator, Microsoft Internet Explorer, or any other known browser software. A client-side data store **160** may also be provided for storing marketing content, content formatting information, and any other content related information, as well as user event data. Client side data store **160** may be configured as an array, flat file or any other memory configuration known in the art.

[0046] Network **140** connects Web server **110** and client nodes **150** and may include one or more communication networks, including the Internet or any other similar network that supports Web-based processing. Client nodes **150** may connect to network **140** through any suitable wired or wireless supported, connection.

[0047] Third party entities **180** are entities that provide content to be rendered by Web server **110**. Third party entities **180** may include interface nodes that enable network communications between the third party entity and network **140**, as shown in **FIG. 1**. The interface nodes may include a desktop computer, workstation or any other web server system known in the art. Third party entities **180** may include interface nodes that are equipped with Web server software such as, Microsoft Internet Information Server, Novell Web Server, Netscape Enterprise Server, or any other Web server software known in the art. Third party entities **180** are associated with providers of goods or services, that desire to conduct business with Web server **110**. These may include corporations, companies, individuals, or any other type of entity that can interact with Web server **110** and/or the provider of Web server **110** indirectly of network **140**. That is, third party entities **180** may communicate with the provider of Web server **110** through other means than that illustrated in **FIG. 1**, such as telephonic communications, postal mail, electronic mail and any other known methods or means for communicating and interacting with the provider of Web server **110**.

[0048] Middleware program **112** determines the content to serve to the clients **150** based on results of a in-view user response analysis performed by analytical program **115**. Middleware program **112** may be constructed using JavaScript, Java Servlet, Java ServerPage, Active Server Page, Perl, C++, VB Script, XSL, SQL, or any other similar programming language.

[0049] Analytical program **115** reads and analyzes collected user response data to produce results associated with the effectiveness of the content rendered to the client nodes **150**. Analytical program **115** also analyzes the user response data to determine in-view characteristics of the content rendered at the client nodes **150**. Based on the results, analytical program **115** adjusts rules and content stored in data store **130**, and produces an in-view results file. Analytical program **115** is programmed by analysis system **170**, with analytical program rules that govern the analysis on the collected user response data.. Analysis system **170** may initialize analytical program **115** prior to the first rendering of a Web page, and may periodically adjust the analytical program rules during system operation. Analytical program **115** may be constructed using JavaScript, Java Servlet, Java ServerPage, Active Server Page, Perl, C++, VB Script, XSL,

SQL, or any other similar programming language. Analytical program **115** may be located in a remote location from the Web server as well.

[**0050**] Billing program **113** performs billing analysis based on results of a in-view user response analysis performed by analytical program **115**. Billing program **113** generates billing records reflecting the billing analysis and may communicate with third party entities **180** that are connected to network **140**. Billing program **113** may be constructed using JavaScript, Java Servlet, Java ServerPage, Active Server Page, Perl, C++, VB Script, XSL, SQL, or any other similar programming language.

[**0051**] Data store **120** connects to Web server **110**, and stores user event data collected at the client nodes **150**. Data store **120** may include a database or flat file data store, or may also include a flat file data store that flushes its stored data to a database for reliability and access time purposes. Furthermore, data store **120** may include a redundant database that ensure data is available in the event a primary storage element experiences a fault or error. A multitude of fault tolerant architectures may be implemented to ensure data consistency and availability.

[**0052**] Data store **130** connects to Web server **110**, and stores content and associated rules (referred to as content rules) controlling how the content is to be rendered. As described for data store **120**, a multitude of fault tolerant architectures may be implemented with data store **130** to ensure data consistency and availability. The content may include attributes associated with content renderings, such as document structure, wireless card structure, titles, headings, paragraphs, lines, lists, tables, links, graphics, objects, multimedia, scripts, forms, frames, colors, wording, size, positioning, background properties, border properties, font properties, text properties, or any combination thereof. The content may also include, but is not limited to, products and services such as wireless phones, credit cards, available financial solicitations (loans) or any other products and services that may be solicited using Web-based marketing or advertising techniques.

[**0053**] Content rules may include code that governs how the content is rendered on a Web page presented at the client nodes. These rules may control variations of the attributes associated with the content, such as the types of font, text, color, position, products, characteristics of associated multimedia files, various services available, or any other types of attributes associated with the content rendered. The rules may also control the frequency in which the variations of the attributes take place, such as rendering a particular font for 20% of the rendering time, or rendering a particular version of the content for 30% of the rendering time. As described above, a multitude of variations of rules and content can be processed by the Web server, and are not limited to the examples listed above.

[**0054**] **FIG. 2** is an exemplary flow chart of the steps performed by network **100** when performing dynamic Web-based content delivery, in accordance with methods consistent with the invention. The process begins when users located at client nodes **150** request a Web page from a Web server **110** located on network **140**, using well known client side Web page accessing techniques. In response to the request, Web server **110** subsequently provides the requested page to the client nodes and browser software executing on each client node (Step S.**200**). A detailed description of an exemplary presentation process will be described below with reference to **FIG. 3**.

[**0055**] Each user browses the Web page, and initiates user events by performing activities such as screen scrolling, mouse movements, page resizing, link selections, or any other similar user activity associated with page browsing. The user events are monitored, collected and stored in each respective client side data store **160** (Step S.**210**). In response to a client side trigger detected at each client node, the stored user events are subsequently returned to the Web server **110** and stored in data store **120**. A detailed description of an exemplary data collection process will be described below with reference to **FIG. 5**.

[**0056**] Analytical program **115** retrieves the stored user event data, and performs analysis (e.g. for marketing or advertising purposes) on the stored user event data in relation to the served content (Step S.**220**). Upon completion of the market analysis, analytical program **115** may edit the content and content rules stored in data store **130**. A detailed description of an exemplary analysis process will be described below with reference to **FIG. 6**.

[**0057**] Upon detection of a subsequent request for the Web page from any client node **150**, middleware program **112** applies the content rules and content updated in data store **130**, adjusts the content associated with the requested Web page, and Web server **110** serves the page, with the adjusted content, back to the client nodes **150** requesting the page. Requesting client nodes **150** receive the Web page with the adjusted content and presents the page to respective users via the browser software executing at each respective client node. (Step S.**230**). A detailed description of an exemplary update process will be described below with-reference to **FIG. 3**.

[**0058**] The process illustrated in **FIG. 2** may continue in a closed loop enabling Web server **110** to perform dynamic market analysis on rendered content and perform automatic content modifications to test the effectiveness of the modified content.

[**0059**] **FIG. 3** is a flow chart of the presentation process described in **FIG. 2**. The process begins with the content to be rendered and the rules associated with the content being initialized (Step S.**310**).

[**0060**] The provider governing the Web server determines the types of content it wishes to market. The content may be, for example, versions of financial products, such as credit cards, offered from a financial institution. The different credit card versions may include, for example, various percentage rates, physical types of cards offered (images printed on the face of the credit card), and introductory offers associated with each card.

[**0061**] The content may also include various versions of the information associated with each credit card offered by the financial institution. **FIGS. 4A-4C** show Web page rendering examples of alternate versions of content representing credit card offers from a financial institution. **FIG. 4A** shows a Web page **400** displayed at a client node **150** via browser software. Web page **400** includes a first version **410** that shows first data that can describe customized information concerning one type of credit card available from the provider. First version **420** shows another credit card offered

by the provider as well, while version **425** shows marketing information for another type of credit card. **FIG. 4B** illustrates a second version **430** positioned in the same location as first version **410**. Second version **430** represents alternate content associated with the same credit card solicitation associated with first version **410**. **FIG. 4C** illustrates a third version **440** positioned in the same location as first version **410**. Third version **440** represents alternate content associated with the same credit card solicitation associated with first and second versions **410**, **430**.

[**0062**] **FIGS. 4D-4F** show further examples of a Web page rendering examples of alternate versions of content representing actual products offered by a provider, in this case wireless phones. **FIG. 4D** illustrates Web page **400** displaying first versions, **450**, **460** and **470**, of wireless phones that can be purchased by the user from the provider. **FIG. 4E** shows version **480**, which is an alternate rendering of version **450**. **FIG. 4F** shows version **490**, which is an alternate rendering of versions **450** and **480**.

[**0063**] Thus, as can be seen from the examples of **FIGS. 4A-4F**, the content selected by a provider may represent a plurality of types of content, wherein the content itself may represent alternate products or renderings of existing products or services offered by the provider.

[**0064**] Returning to **FIG. 3**, the defined rules associated with the content may include code that governs attribute information associated with existing content defined in Step S.**310**. These rules may govern, for example, frequency of the renderings of the content, color of the content, characteristics of multimedia files or links, and specific positioning or font of content rendered on Web page **400**.

[**0065**] **FIGS. 4G and 4H** show the results of when the rules defined in data store **130** alter the position of the third version **440** described in **FIG. 4C**. Referring to **FIG. 4C**, third version **440** is shown at a first position "on top" of version **420**. **FIG. 4G** illustrates Web page **400** adjusted by rules governing position of content, in this case third version **440** is positioned below version **420**. **FIG. 4H** illustrates Web page **400** adjusted by rules governing position, in this case third version is positioned below version **425**, and version **420** is positioned above version **425**.

[**0066**] **FIGS. 4I and 4J** show the results of when the rules defined in Step **410**, alter the font style of Web page **400** rendered in **FIG. 4H**. As can be seen, **FIG. 41** illustrates versions **420**, **425** and **440** displayed in a font style different from that shown in **FIG. 4H**, while **FIG. 4J** illustrates the same three versions displayed in a font style different from that shown in **FIGS. 4H and 4I**.

[**0067**] Accordingly, the content rules stored in data store **130** may be defined to alter the display of existing content by changing attributes, such as font and position These rules may be defined to alter these attributes in combination or individually, depending on the results of analytical program **115**, which process the effectiveness of a particular rendering presented to users located at the client nodes **150**.

[**0068**] As previously described, the rules and content defined by methods, systems and articles of manufacture consistent with the present invention are not limited to the above described examples, rather only by the specific providers marketing or advertising their respective products and services. That is, the disclosed invention may be applied to a wide range of products and services which providers can solicit using a Web-based content delivery scheme.

[**0069**] Returning to **FIG. 3**, once data store **130** has been initialized with content and content rules, the analytical program is checked to determine whether it has been programmed and set by analysis system **170** (Step S.**320**). Upon determining that analytical program **115** has not been programmed, analysis system **170** downloads code representing analytical program rules associated with performing market analysis on user response data (Step S.**330**). In an alternate embodiment of the present invention, Step S.**330** may be performed to determine whether analytical program **115** needs to be updated with new analytical program rules by analysis system **170**.

[**0070**] Analysis system **170** may be an outside analysis entity, generally associated with a provider governing Web server **110**. Analysis system **170** may perform detailed market and advertising analysis, and predication statistical analysis on the effectiveness and proposed effectiveness of content rendered in Web pages provided by Web server **110**. Analysis system **170** may also generate analytical program rules that enable analytical program **115** to automatically make decisions on the effectiveness of presented content, based on the collected user response data. For example, one type of analytical program rule may analyze the percentage of time a number of versions of a Web page that has been rendered by Web server **110**, in relation to a proportional "click-through" percentage for each particular version. Based on this analysis, the analytical program rule may adjust the rendering time for the version with the highest "click-through" rate. This example may be illustrated as follows:

[**0071**] Analytical Program Rule:

[**0072**] If version N's "click-through" rate increases by 10% for testing period X, proportionally adjust rendering time of version N by 25%.

TABLE 1

	Content Version		
	Version 1	Version 2	Version 3
Rendering Time %	33%	33%	33%
Click Through %	Down 10%	Up 15%	No change

[**0073**] Analytical program **115** analyzes the above collected information, recognizes that Version 2 in Table 1 meets the criteria for the defined rule, and adjusts the rendering time of Version 2 as shown below in Table 2.

TABLE 2

	Content Version		
	Version 1	Version 2	Version 3
Adjusted Rendering Time %	21%	58%	21%
Click Through %	Not collected	Not collected	Not collected

[**0074**] As described, Analysis system **170** may generate a wide range of analytical program rules based on a large

number of conditions. That is, the analytical program rules downloaded to analytical program **115** are not limited to the above example, and may include rules that govern attributes other than rendering time such as content attributes (i.e. font, color, position, URL highlighting etc.).

[**0075**] Furthermore, analytical program rules may be include a combination of rules such that several content and Web page conditions are evaluated concurrently and multiple adjustments to the content may be executed. For example, in addition to the number of "click-throughs" being monitored and considered by the analytical program **115**, the day of the week, or even the time of day, may also be considered. That is, user response data may indicate that a particular version is more popular on a weekend, or during selected hours of a day. Thus, a rule may include adjustments on rendering time based on not only "click-through" rate, but when the version is most popular. As described above, Version 2 may be rendered 58% of the time only on Saturdays, while version one is rendered 50% of the time on Mondays through Thursdays, from 6:00 P.M. to 10:00 P.M.

[**0076**] As can be seen, an endless number of combinations of user response data, and associated content adjustments may be incorporated into the analytical program rules executed by analytical program **115**, and are not limited to the example described above.

[**0077**] Returning back to **FIG. 3**, once the rules and content have been defined and analytical program has been programmed, the content and rules are stored in data store **130** (Step S.**320**). In an alternate embodiment of the invention, step S.**320** may be performed after the content and content rules are defined in step S.**310**.

[**0078**] When a request for a Web page is received by Web server **110**, middleware program **112** executes an algorithm to determine what content needs to be built into the Web page before it is served to the client. In one embodiment of the invention, for an initial request for a Web page (i.e. a page that has never been rendered by Web server **110**), middleware program **112** may first determine the type of user generating the request. This may be performed by retrieving user identification information associated with the user requesting the Web page, using techniques well known in the art, such as cookies, and checking the identification information against a user profile resource. This process allows the user, or a group of users, to be associated with particular social, economic, educational and commercial interests. The process of utilizing user or group profiles for classifying users for target marketing is well known in the art, and the present invention can implement any number of these techniques, as long as the required user information is retrieved and is available for processing.

[**0079**] Upon determining the type of user initially requesting the Web page, middleware program **112** accesses data store **130** to determine the associated content to be served to the user, via the Web page. Middleware program **112** uses the user's identification and profile information to select available content alternatives stored in data store **130**. The rules associated with the content in data store **130** are appended with the selected content, such that the rendering of the content is subject to the restrictions defined by its assigned content rules. Middleware program **112** applies the rules (Step S.**330**), and builds the content into the requested Web page and inventories the content for future analysis. The updated Web page is then served to the client node **150** where the user requesting the page is located. Client node **150** executes its browser application to present the updated Web page to the user (Step S.**340**).

[**0080**] In the event a request is received for a Web page that has already been served by Web server **110**, middleware program **112** selects adjusted content and content rules based on results from the analytical program **115**. The need for individual user profiling may be replaced with user group profiling. This process is associated with the analytical program **115** analyzing user response data and modifying the content and content rules stored in data store **130**. As described above, middleware program **112** applies the content rules to the content and renders an adjusted Web page that is also used for subsequent market analysis.

[**0081**] **FIG. 5** is an exemplary flow chart of the data collection process described in **FIG. 2**. The process begins with the initialization of client side data store **160** (Step S.**510**). This step makes sure that each client side data store **160** is empty and can receive new information. The requested Web page provided to the client node **150** from the Web server **110**, includes an algorithm implemented using client side scripting, applets or other similar processing techniques, for storing the content rendered (Step S.**520**) into the client side data store **160**. The algorithm further is implemented to store the content rules applied to the content (Step **6.530**), as well as any other information pertinent to the identification of the type of data rendered at the client node **150**.

[**0082**] Once the Web page is received and rendered at each client node **150**, respective users "browse" the Web page, generating user activated events. These events may be associated with the user making link selections on the Web page to other pages, via URLs, mouse movements, screen scrolling, window resizing, or any other user initiated event. User behavior is monitored by capturing these events and storing them into client side data store **160** (Step S.**540**), using client side scripting, applets, or other similar processing techniques. For example, client side scripting languages such as JavaScript include commands that enable a program to recognize selected "events" performed by users. The client side script served to each client node by Web server **110**, uses the client side script commands to collect detailed user response information. This process enables the present invention to recognize not only well known user events, such as "click-throughs", but whether selected content is actually in-view to the users. As the user generates the events, the client side data store **160** accumulates the event data dynamically.

[**0083**] The client side script may collect detailed event data by using commands well known in Web-based programming languages, such as Javascript and VBScript. For example, to detect a "mouseover" event, which is an event associated with detecting when a user's mouse pointer moves over a component of a Web page, client side Web-based programming commands are implemented to target selected components on the Web page. For instance, the target components may include, but are not limited to, an image, text, paragraph, hyperlinks or any attribute of a Web page. When a user's mouse pointer moves over a target component, the client side script recognizes this movement based on the execution of a command triggered by the

mousepointer's position over a targeted component. Subsequently, the client side script makes a record of the triggered event in the client side data store. Accordingly, the placement of a user's mouse over targeted components of a rendered Web page may be recognized by the client side script, and stored as user events for analysis by Web server **110**.

[**0084**] To monitor the in-view features of the present invention, the client side script uses the well known Web-based programming commands to collect coordinate and size information related to the browser window, the Web-page rendered within the browser window and components rendered within the Web page. This information is collected and stored in client side data store **160**, along with the other event data. A plurality of user browsing activities affect how the client side script, or Web server **110**, determines whether a target component is actually viewable by a user. The activities may include, but are not limited to, scrolling and resizing browser windows. Activities such as these affect the position of the components and Web page rendered in the browser window. The size of the browser window must be taken into account as well, because a user may adjust the size of browser window while viewing the Web page. **FIGS. 9A-9C** illustrate an exemplary client side display that includes a Web page rendered within a browser window.

[**0085**] As shown in **FIG. 9A**, a client side computer display **970** presents a couple of windows **972** and **974**, representing applications running on a client node **150**. Window **974** represents a Web browser application being executed at the client node **150**, while window **972** represents any other software application that may be executing while the browser software is currently running. Window **974** includes a Web-page **976** and a target component **978**, which is located on Web page **976**. Target component **978** may be associated with a number of different types of Web-page content as previously described. As can be seen in **FIG. 9A**, Web page **976** and target component **978** are partially in view.

[**0086**] The partial view of Web page **976** and component **978** is better illustrated in **FIG. 9B**. **FIG. 9B** includes display **970**, Web browser window **974**, and target component **978** as shown in **FIG. 9A**. Additionally, **FIG. 9B** includes a representation of an unseen portion **980** of Web page **976**, and an unseen portion **982** of target component **978**. **FIG. 9B** also includes values $W_{browser}$, $H_{browser}$, Y_{P1}, Y_{P2}, Y_{C1}, Y_{C2}, X_{P1}, X_{P2}, X_{C1}, X_{C2}, $W_{component}$, and $H_{component}$, which will be described in further detail later. In order for the client side script to determine whether a component is in view to a user, detailed positional information is collected and stored in client side data store **160**.

[**0087**] The in view collection process begins when selected events occur, initiated by the user viewing the Web browser application at client node **150**. The selected events may include, but are not limited to, scrolling or resizing of the browser, and loading of a Web page. The Client side script recognizes these triggers and begins to collect in view characteristic data. Coordinate information based on the position of the windows in display **970** are needed to determine the in view status of a target component. As shown in **FIG. 9B** the center axis for a coordinate grid associated with Web based displays is located at the upper left hand corner of display **970**. The coordinates (X, Y) for the center axis represented is (0, 0). Quadrant IV of the (X, Y) graph represents the positive axis quadrant for the (X, Y) axis represented in **FIG. 9B**. That is, the X axis runs in positive values of pixels from left to right, starting at the center axis, and the Y axis run in positive values of pixels from top to bottom, starting at the center axis.

[**0088**] Once a selected event occurs, the client side script executes commands to calculate the coordinates of the top of Web page **976** that is viewable in browser window **974**, and is represented by coordinates Y_{PI} and X_{P1}.

[**0089**] Coordinates Y_{P1} and X_{P1} are represented in (X,Y) format as:

[**0090**] $Y_{P1}=(Y_{PIX},Y_{P1Y})$

[**0091**] $X_{P1}=(X_{P1X},X_{P1Y})$

[**0092**] For the exemplary illustration in **FIG. 9B**, coordinate Y_{P1} is determined using well known client side scripting commands. Coordinate X_{P1} is unknown because of the size of window **974** and Web page **976** are dynamic based on user activities. However, because of the characteristics of the X,Y graph superimposed on display **970**, the following conditions are known:

[**0093**] (A) $Y_{P1X}=Y_{P2X}$

[**0094**] (B) $X_{P1X}=X_{P2X}$

[**0095**] (C) $Y_{P1Y}=X_{P1Y}$

[**0096**] (D) $Y_{P2Y}=X_{P2Y}$

[**0097**] Accordingly, coordinate X_{P1Y} is known because of condition (C).

[**0098**] As shown in **FIG. 9B**, portion **982** of component **978** is not viewable in Web page **976**. User activities such as resizing windows and scrolling affect the in view portion of Web page **976** and component **978**. Accordingly, to determine what are the actual in view portions of Web page **976** and component **978**, the client side script executes known Web-based programming language commands to collect the known current height $H_{browser}$ and width $W_{browser}$ of browser window **974**.

[**0099**] Once this information is generated, the client side script may now find the true viewable bottom coordinates Y_{P2} and X_{P2} and missing coordinate X_{P1X} of coordinate X_{P1} of the viewable Web page in the viewable browser window **974**.

[**0100**] Coordinates Y_{P2} and X_{P2} are represented in (X,Y) format as:

$$Y_{P2}=(Y_{P2X}, Y_{P2Y})$$

$$X_{P2}=(X_{P2X}, X_{P2Y})$$

[**0101**] Y_{P2} and X_{P1X} are generated by first performing a pair of functions that adds the current height of the browser window $H_{browser}$ to the Y coordinate of coordinate Y_{P1} and adds the current width $W_{browser}$ to the X coordinate of coordinate Y_{P1}, respectively. This is represented by functions (1) and (2) below:

$$Y_{P2Y}=H_{browser}+Y_{P1Y} \quad (1)$$

$$X_{P1X}=W_{browser}+Y_{P1X} \quad (2)$$

[**0102**] Since the coordinates of Y_{P1} and X_{P1} and coordinate Y_{P2Y} are now known, the rest of the coordinates for Y_{P2} and X_{P2} can be calculated using conditions (A), (B) and (D).

[0103] Next, the client side script executes commands to calculate the coordinates of target component **978** within Web page **974**. Coordinates Y_{C1} and X_{C1} represent the coordinates of the top of component **978**.

[0104] Coordinates Y_{C1} and X_{C1} are represented in (X,Y) format as:

$$Y_{C1}=(Y_{C1X},Y_{C1Y})$$

$$X_{C1}=(X_{C1X},X_{C1Y})$$

[0105] Since the component was generated in the Web page at Web server **110**, the position of component **978** in relation to Web page **976** may be determined during client side scripting known in the art. For example, if it is known that the component is 100 pixels down from the top edge of Web page **976** and 100 pixels from the left edge of Web page **976**, the actual coordinates of Y_{C1} of component **978** in relation to browser window **974**, which is in relation to display **970**, may be calculated as follows:

$$Y_{C1X}=Y_{P1X}+100$$

$$Y_{C1Y}=Y_{P1Y}+100$$

[0106] Since the design of the Web page is controlled by Web server **110**, the dimensions of component **978**, such as the height $H_{component}$ and width $W_{component}$ of component **978**, may be determined using client side scripting known in the art. Once these values are determined, the bottom coordinates Y_{C2} and $X_{C2}$and coordinate X_{C1} of the target component in relation to browser window **974** may be calculated.

[0107] Coordinates Y_{C2} and X_{C2} are represented in (X,Y) format as:

$$Y_{C2}=(Y_{C2X}, Y_{C2Y})$$

$$X_{C2}=(X_{C2X}, X_{C2Y})$$

[0108] It should be noted that because of the characteristics of the X,Y graph superimposed on display **970**, the following conditions are known:

[0109] (D) $Y_{C1X}=Y_{C2X}$

[0110] (F) $X_{C1X}=X_{C2X}$

[0111] (G) $Y_{C1Y}=X_{C1Y}$

[0112] (H) $Y_{C2Y}=X_{C2Y}$

[0113] Using condition (G), X_{C1Y} is now known. Y_{C2} and X_{C1X} may be calculated by performing functions (3) and (4) below:

$$Y_{C2Y}=H_{component}+Y_{C1Y} \quad (3)$$

$$X_{C1X}=W_{component}+Y_{C1X} \quad (4)$$

[0114] Using conditions (D), (F) and (H), coordinates Y_{C2X}, X_{C2X} and X_{C2Y} are now known.

[0115] Now that all of the coordinates shown in **FIG. 9B** are calculated, the coordinates of target component **978** are compared to the coordinates of the viewable Web page rendered in the browser window **974** to determine whether the target component is entirely positioned in browser window **974**. This enables the client side script to determine whether the target component is in full view or not. This comparison process may be performed a variety of ways, including checking X and Y coordinates of both the Web page and component.

[0116] In one embodiment of the invention, to determine the Y bottom coordinate in view value of coordinate Y_{C2} of target component **978**, client side script performs function (5):

$$Y_{C2\ bottom\ in\ view\ value}=Y_{C2Y}-Y_{P2Y} \quad (5)$$

[0117] If $Y_{C2\ bottom\ in\ view\ value}$ is equal to 0 or is a negative number, the component is in 100% full view within browser window **974**.

[0118] To determine the X right side coordinate in view value of coordinate X_{C2} of target component **978**, client side script performs function (6):

$$X_{C2\ right\ in\ view\ value}=X_{C2X}-X_{P2X} \quad (6)$$

[0119] If $X_{C2\ right\ in\ view\ value}$ is equal to 0 or is a negative number, the component is in 100% full view within browser window **974**.

[0120] To determine the Y top coordinate in view value of coordinate Y_{C1} of target component **978**, client side script performs function (7):

$$Y_{C1\ top\ in\ view\ value}=Y_{C1Y}-Y_{P1Y} \quad (7)ps$$

[0121] If $Y_{C1\ top\ in\ view\ value}$ is equal to 0 or is a positive number, the component is in 100% full view within browser window **974**.

[0122] To determine the X left side coordinate in view value of coordinate X_{C1} of target component **978**, client side script performs function (8):

$$X_{C1\ left\ in\ view\ value}X_{C1X}-X_{P1X} \quad (8)$$

[0123] If $X_{C1\ left\ in\ view\ value}$ is equal to 0 or is a positive number, the component is in 100% full view within browser window **974**.

[0124] As seen, the coordinates of the windows and components rendered in browser **974**, are generated in relation to display **970**, and the current position and size of browser window **974**. As previously mentioned, there are a number of different ways which the coordinate information may be analyzed to determine whether target components are in view or not, and are not limited by the above exemplary procedures.

[0125] In addition, client side script may utilize the coordinate information to determine the proportion of viewable components in relation to the web page **976**. This may be done a variety of ways for each edge of the component, and may only be performed when it is determined using functions (5)-(8) that a portion of the component **978** is not in full view. For example, when determining the proportion of a component in view using the bottom coordinate of Web page **976**, client side script may perform the following functions:

$$Y_{proportion\text{-}bottom}=(Y_{P2Y}-Y_{C1Y})/H_{component} \quad (9)$$

[0126] $Y_{proportion\text{-}bottom}$ shows the ratio of the viewable Y coordinate portion (or height) of component **978** in relation to the total height of the component, for components bounded by the bottom coordinates of Web page **976**.

$$Y_{proportion\text{-}top}=(Y_{C2Y}-Y_{P1Y})/H_{component} \quad (10)$$

[0127] $Y_{proportion\text{-}top}$ shows the ratio of the viewable Y coordinate portion (or height) of component **978** in relation to the total height of the component, for components bounded by the top coordinates of Web page **976**.

$$X_{proportion\text{-}right}=(X_{P1X}-Y_{C1X})W_{component} \quad (11)$$

[0128] $X_{proportion\text{-}right}$ shows the ratio of the viewable X coordinate portion (or width) of component **978** in relation to the total width of the component, for components bounded by the right side coordinates of Web page **976**.

$$X_{proportion\text{-}left}=(X_{C1X}-Y_{P1X})/W_{component} \quad (12)$$

[0129] $X_{proportion\text{-}left}$ shows the ratio of the viewable X coordinate portion (or width) of component **978** in relation to the total width of the component, for components bounded by the left side coordinates of Web page **976**.

[0130] Functions (9)-(12) are ratio values, and may be converted into percentage values that may not exceed 100%.

[0131] **FIG. 9C** shows an exemplary block diagram of display **970** illustrated in **FIG. 9B**. In **FIG. 9C**, Web page **976** has been scrolled down, thus moving target component **978** further "up" on display **970**. For exemplary purposes, **FIG. 9C** includes coordinate information associated with coordinates Y_{P1}, Y_{P2}, Y_{C1}, Y_{C2}, X_{P1}, X_{P2}, X_{C1}, X_{C2}. However to better illustrate the in view process, the following example will follow the same process as described for **FIG. 9B**.

[0132] After the client side script recognizes that the Web page has been scrolled, commands are executed to perform the operations previously described for **FIG. 9B**, such as:

[0133] Y_{P1}=(100,300), and using condition (C), it is determined that X_{P1Y}=300;

[0134] Using known commands to collect the dimensions of Web page **976**:

$W_{browser}$=400;

$H_{browser}$=600;

[0135] Using functions (1) and (2):

$$Y_{P2Y}=600+300=900; \quad (1)$$

$$X_{P1X}=400+100=500; \quad (2)$$

[0136] Using conditions (A), (B) and (D), it is determined:

[0137] (A) $Y_{P2X}=Y_{P1X}$=100;

[0138] (B) $X_{P2X}=X_{P1X}$=500;

[0139] (D) $X_{P2Y}=Y_{P2Y}$=900;

[0140] Collecting design information for component **978**, it is determined that:

[0141] $Y_{C1=(}$200,500)

[0142] $H_{component}$=200;

[0143] $W_{component}$=200;

[0144] Using condition (G):

[0145] X_{C1Y}=YC1Y=500;

[0146] Using functions (3) and (4):

$$Y_{C2Y}=200+500=700; \quad (3)$$

$$X_{C1X}=200+200=400; \quad (4)$$

[0147] Using conditions (D), (F) and (H):

[0148] (D) $Y_{C2X}=Y_{C1X}$=200;

[0149] (F) $X_{C2X}=X_{C1X}$=400;

[0150] (H) $X_{C2Y}=Y_{C2Y}$=700;

[0151] Accordingly, all of the coordinates of component **978** have been calculated. To generate proportional in view information, client side script may perform functions (5)-(8) as follows:

$$Y_{C2\ bottom\ in\ view\ value}Y_{C2Y}-Y_{P2Y}=700-900=-200; \quad (5)ps$$

$$X_{C2\ right\ in\ view\ value}X_{C2X}-X_{P2X}=400-500=-100; \quad (6)$$

$$Y_{C1\ top\ in\ view\ value}=Y_{C1Y}-Y_{P1Y}=500-300=200; \quad (7)$$

$$X_{C1\ left\ in\ view\ value}=X_{C1X}-X_{P1X}=200-100=100; \quad (8)$$

[0152] Since functions (5)-(8) determine that component **978** is 100% in full view, proportional calculations do not need to be generated. However, if it is determined that a portion of component is not in view, the appropriate coordinate side would have a proportion calculation performed against it [i.e. functions (9)-(12)], to generate an in view percentage characteristic.

[0153] Accordingly, a number of different in view characteristic data may be generated using the coordinate information calculated by the client side script. In an alternate embodiment of the invention, client side script stores the coordinate information in data store **160**, and when analytical program **112** receives this information, the above in view analysis may be performed at the Web server **110**.

[0154] The in view data collected by the client side scripts may provide information such as data indicating whether content is actually viewable by respective users, mouse movements across a Web page, position of the Web page based on screen scrolling, length of time a mouse pointer is positioned in a determined location of the Web page, and a plurality of other "detailed" user behavior events associated with browsing. The potential for an enormous amount of user response data to be collected may be controlled by the programming of the client side script implemented by Web server **110**. In other words, Web server **110** may be programmed to provide client side scripts that monitor general user response data, or numerous detailed user response data, depending upon the level of granularity of market analysis desired by the Web server.

[0155] Once a client side trigger event occurs in a respective client node **150** (Step S.**550**), the information accumulated in client side data store **160** is ready for transmission to data store **120** and Web server **110** for processing. The client side trigger event may be associated with a plurality of customized events, including but not limited to, the client side data store **160** being filled up to a threshold limit, the browser being closed, or a user selecting another Web page. The provider of Web with, and have them programmed into the present invention's monitoring script.

[0156] The event data is sent back to Web server **110** by executing a routine associated with a URL appended to the Web page served at the client node **150**. The Web page sent to the client node **150**, includes a portion with a URL dedicated to the dynamic transmission of the collected data to Web server **110**. The routine appends the collected user event data from the client data store **160**, onto the dedicated URL. That portion of the Webpage is dynamically reloaded, forcing the collected user event data to be sent to the Web server **110** (Step S.**560**). Upon receipt of the collected user event data, Web server **110** forwards it to data store **120**, for storage. Thus, Web server **110** is continuously receiving user response data from each client node **150** being served by the Web server **110**, giving the server continuous marketing

information from which to base analysis of the content rendered to the client nodes **150**.

[**0157**] **FIG. 6** is an exemplary flow chart of the analyze responses process described in **FIG. 2**. The process begins when the collected user responses stored in data store **120** are accessed by Web server **110** (Step S.**610**). Analytical program **115** retrieves the collected user response data and initiates an analysis program including the analytical program rules received by analysis system **170** (Step S.**620**). Analytical program **115** determines whether the Web page rendered at each client node **150**, with its associated content, needs adjustment based on the collected user response data. Analysis may include correlating predetermined threshold values with the user response data. That is, if the user response data indicates that particular content was viewable to a user for a certain amount of time, based on the in-view features of the user response collection operations performed by the client side scripts, that may indicate the user was viewing the content for that certain time frame. Accordingly, a threshold value associated with particular content, and the amount of time it was viewable, may be incorporated into the analytical program rules programmed into analytical program **115**. Analytical processing may include comparing the threshold value with the collected user response data to make a determination whether the content or rules stored in data store **130** need adjustment. The correlation processing performed by analytical program **115** may be associated with a plurality of user events, such as link selections, scrolling, maximizing/minimizing windows. Analytical program **115** processes the results of the analyzed user response data, and updates the content rules, and/or content stored in data store **130**, automatically.

[**0158**] As previously mentioned, a multitude of combinations of analytical program rules maybe applied concurrently with the analysis of a plurality of user response data stored in data store **120**. For example, consider a Web page rendered by Web server **110** including an application that requires users to fill out selected fields requesting information, such as a credit card application. For this example, user response data collected by each client side script may include information regarding whether or not a respective user finished completing the application. In the case of incomplete applications, the client side scripts may collect information indicating where in the application a user stopped entering data, where the user's mouse was located for a majority of the rendering time, whether the user scrolled up and down the application prior to and during data entry, and how long the user stayed at the page during data entry.

[**0159**] Further to the above-described example, the analytical program rules applied may be associated with each type of collected user response, such as a rule adjusting the color of a particular window within the application based upon the average position of the Web page in view to the users, or a rule adjusting the type of text or type of questions (fields) based upon the average rendering time of a particular portion of the application in-view to the users. The number of combinations of analytical program rules and associated user response data is extremely high and may be utilized by analytical program **115** and analysis system **170** when performing marketing analysis.

[**0160**] Upon completion of its analysis, analytical program **115** utilizes the collected response data and may apply a number of different rules associated with each response data characteristic, to determine what type of changes, if any, are needed to the content and content rules stored in data store **130** (Step S.**630**). Accordingly, the content rules and types of content may be altered or added to data store **130**.

[**0161**] The analysis performed by analytical program **115** may be performed periodically based upon predetermined conditions set by Web server **110**. These conditions may include, but are not limited to, a predetermined clock cycle time and the data store **120** reaching a maximum data threshold.

[**0162**] Upon Web server **110** receiving a subsequent request for the Web page after analytical program **115** completes its analysis of the Web page, analytical program **115** determines whether automatic lift of the rendered content should occur, based upon the analyzed user response data, and information associated with the user located at client node **150** (Step S.**640**). Middleware program **112** applies the updated rules to the content if it is determined that a lift of the rendered content its needed.

[**0163**] Accordingly, Web server **110** may automatically adjust content rendered on the Web page previously rendered at client nodes **150**. A provider controlling the Web server **110** may test the success of certain content or content rules on a customized and dynamic basis. That is, the provider of Web server **110** may program middleware program **112** to adjust the content to test new changes in attributes, or entirely new content, on an automatic basis using the content rules stored in data store **130** and the results of analytical program **115**.

[**0164**] Once middleware program **112** analyzes the results of analytical program **115**, and applies the rules stored in data store **130** to the content, the Web page is updated and Web server **110** serves the updated page to client nodes **150** requesting the page after analysis and modification of the page have been completed.

[**0165**] For example, consider users located at client nodes **150**, viewing the Web page **400** shown in **FIG. 4C**. Systems, methods and articles of manufacture consistent with the present invention would enable the system to monitor the users' behavior associated with Web page **400**, collecting detailed information about the users' activities. In this case, assume a plurality of users viewing Web page **400** shown in **FIG. 4C**, "clicks-through" on one of the links displayed on the left hand side of Web page **400**, under PRODUCTS within ten seconds of Web page being rendered on the users' client node **150**. The activities of the users selecting the PRODUCTS link is stored in each respective client side data store **160**. Once the users have selected a link on Web page **400**, a client side trigger event was initiated (defined for this example), and the collected user information, along with the collected rules and content information, is sent to Web server **110**, and subsequently stored in data store **120**.

[**0166**] Assume for this example, that the amount of time third version **440** was displayed was a criteria for analysis defined in the analytical program rules executed by analytical program **115**. In the above example, the plurality of users monitored did not satisfy predefined conditions for a successful rendering of the third version **440**, because as defined in the analytical program rules, within ten seconds the users

"clicked-through" to another link and ignored versions **440**, **420** and **425** displayed in the center of Web page **300**. Accordingly, results reflecting this analysis would be generated by analytical program **115**, and in response to the analysis results, analytical program **115** may redefine a content rule stored in data store **130**. In this case, data store **130** includes a plurality of sufficient predefined rules and content, and no changes are made to content rules stored data store **130**.

[**0167**] Middleware program **112** analyzes the content and content rules applied to, Web page **400**, and applies the rules to the content based on the results from the analytical program **115**. In this case, analytical program **115** determined that a change in version position is the appropriate test to initiate, and middleware program **112** applies a content rule to the content in Web page **400** to adjust the position of versions **440**, **420** and **425**. The content rules are applied and the position of the content is altered, as shown in **FIG. 4G**, placing the third version **440** below version **420**. Subsequently, when further requests for Web page **400** is received by Web server **400**, the adjusted page shown in **FIG. 4G** is presented in place of the original page shown in **FIG. 4C** to the client nodes **150** requesting Web page **400**.

[**0168**] The dynamic Web-based marketing operations are repeated, with user behavior being monitored at the adjusted Web page shown in **FIG. 4G**, and the system determines from these new responses whether further adjustments are needed or not. As can be seen, a provider of a Web server may track an enormous amount of marketing information from each user accessing selected Web sites, and gain useful marketing data on the interests and dislikes of potential consumers. This may enable these providers to dynamically adjust their content solicited to the users in order to target them more effectively and to automatically test the effectiveness of the Web pages provided by the Web server.

[**0169**] As a result, the present invention allows providers to perform automatic dynamic market testing. Methods, systems and articles of manufacture consistent with present invention enable users located at client nodes **150**, to not only be targeted for advertising, but to also utilize the users' response for evaluating the success of particular rendered content. The dynamic market analysis performed by analysis program **115** enable the server to automatically adjust served content based on responses from users, in a "real-time" and "hands-free" closed loop operation. This type of operation is an advantage over conventional Web-based marketing techniques that require either drastic or time consuming analysis and manual adjustments to rendered content.

[**0170**] In an alternate embodiment of the invention, the detailed user monitoring and collection implementations performed by methods, systems and articles of manufacture consistent with the present invention may be applied to advertisement and content billing management. **FIG. 7** is a flow chart of a content marketing process associated with the in-view features performed by Web server **110**, in accordance with another aspect of the invention. In accordance with this aspect of the invention, Web server **110** may receive content from third party entities **180** to be included in a rendered Web page by Web server **110**. The content received may include content as previously described, including advertisement objects. In one embodiment of the invention, third party entities **180** may provide Web server **110** with an identifier, such as a URL, to be included in a rendered Web page instead of content. In this embodiment, third party entities **180** control the type of content to be included in a rendered Web page, by enabling the URL to link to the third party entity **180** where the content is created and sent to Web server **110**.

[**0171**] Third party entities **180** may incorporate Web server **110**'s services by sending requests to Web server **110** for including third party content into a Web page provided by Web server **110** (Step S.**710**). In another embodiment, third party entities **180** may contact the provider of Web server **110** in order to incorporate the services provided by Web server **110**. Third party entities **180** may communicate with the provider of Web server **110** using any known communications means available in the art, such as telephonic communications, electronic mail and postal services. In any event, the provider of Web server **110** is made aware of the services desired by third party entities **180** either through network **140**, or through some other means, as mentioned above.

[**0172**] Once a request is received, Web server **110** sets-up a billing account for each third party entity **180** that sent a request (Step S.**720**). A billing account may describe how a third party entity **180** may be charged for particular renderings of third party content within a Web page served by Web server **110**. Utilizing the detailed features of the in-view analysis described previously, Web server **110** may diversify its third party content fees based on whether particular content was actually viewable by a user browsing the Web page served by Web server **110**. For instance, Web server **110** may charge a third party entity **180** a certain fee only when an in-view analysis of the user response data indicates that the third party entity's content was actually viewable to a user. This fee may be altered based on whether the third party content was fully in-view or partially in-view. For example, consider the Web page **400** illustrated in **FIG. 4A**. Window **425** is in partial view, while window **420** is in full view. Assume for purposes of this example that windows **420** and **425** are advertisement content provided by a third party entity **180** to be displayed in Web page **300**. Web server **110** may charge the third party entity **180** a fee of "$ X" for window **420** being displayed while only charging "$ /1;2 X" for window **425**. Furthermore, Web server **110** may not charge any fee for content or components not at viewable by a user.

[**0173**] Moreover, Web server **110** may provide fee options based on every in-view rendering of a third party content, or a "flat" fee for a certain number of viewable renderings. For example, a third party entity **180** may pay a predetermined fee for **5,000 "viewable" renderings of its provided content on a Web page served by Web server 110. In this case, Web server 110 would keep track of the number of in-view renderings of the provided third party content, and continue to render the provided content until the threshold of** 5,000 viewable renderings has been reached. Further to this example, Web server **110** may provide a fee option that charges third party entities **180** additional fees every time a "click-through" occurs on a link included in the third party content.

[**0174**] Accordingly, Web server **110** may provide attractive fee options from which third party entities **180** may chose from, thus ensuring servers **180** are paying for adver-

tisements or content that are actually being seen by users. These fee options may include a plurality of charging options associated with a user's behavior on a Web page and are not limited to the examples described above.

[0175] Referring back to **FIG. 7**, once a billing account has been created for the third party entity **180**, an option for enrolling in a content effectiveness service is provided by Web server **110**, and billing program **113** (Step S.**730**). A content effectiveness plan (CEP) allows Web server **110** to provide third party entities proposed information on the effectiveness of the third party content, based on the analysis performed by analytical program **115**. That is, Web server **110** may generate a report including proposed statistical information regarding the results of the analytical program **115** directed toward the third party content included in a rendered Web page. For a predetermined fee, third party entities **180** may benefit from the automatic analysis features performed by Web server **110**, by receiving detailed reports regarding the activities associated with the content they provided for rendering to Web server **110**. For example, Web server **110** may send a third party entity **180**, enrolled in the CEP, a report depicting user activity associated with their provided content, and provide suggested changes to the content based on analysis performed by the analytical program **115**. Such changes may include changing the color, font, multimedia features, position and any other modifications that may result in increased activity for the rendered content.

[0176] Once a third party entity agrees to enroll in a CEP, a plan is set up (Step S.**740**) by Web server **110**. Upon completion of CEP set-up or a third party entity **180** decides not to enroll in a CEP, the third party entity **180** sends content to be rendered to Web server **110**, and it is stored in data store **130** (Step S.**750**). Web server **110** may create billing accounts from a plurality of third party entities, and incorporate content from the plurality of third party entities into a Web page. Web server **110** generates a predetermined Web page, retrieves the third party content stored in data store **130**, along with other content it will include in the page, and serves the Web page to the client nodes **150** requesting the page (Step S.**760**). In another embodiment, as described previously, the content provided by a third party entity **180** may be a URL that links back to the respective third party entity **180**, where the desired content is provided to Web server **110**. As described previously, client nodes **150** monitor and collect detailed user activity in client side data store **160**, including the in-view activities. Upon encountering a client side trigger event, client nodes **150** send the collected user response data to Web server **110** for storage into data store **120** (Step S.**770**).

[0177] **FIG. 8** is a flow chart of a content marketing and billing process associated with the in-view features performed by Web server **110**, in accordance with another aspect of the invention. Once Web server **110** has received the collected user responses, analytical program **115** retrieves the collected information for analysis (Step S.**810**), as described above with reference to **FIG. 6**. However, in accordance with an aspect of the invention, Web server **110** recognizes when third party content was included in the rendered Web page and in response to this determination performs additional in-view analysis specifically for the third party content. This analysis includes determining the in-view characteristics of each third party content (Step S.**820**). That is, analytical program **115** may determine the number of times each third party content was in-view or partially in-view on each rendering of the Web page. Utilizing the results of the in-view analysis performed by analytical program **115**, billing program **113** generates a billing record associated with each third party entity **180** (Step S.**830**). The billing record includes billing account information on the types of fees charged to each respective third party entity based on the billing account set up by the third party entity **180**.

[0178] Once a billing record has been generated, Web server **110** determines whether a third party entity is enrolled in a CEP (Step S.**840**), and if so a content effectiveness record (CER) is created and appended to the billing record (Step S.**850**). A content effectiveness record is a record that includes the content effectiveness report described earlier with reference to **FIG. 7**. Analytical program **115** analyzes the in-view user response data, along with the other user response data collected and stored in data store **120**, to generate proposed modifications to the third party content, just as content and content rules are modified with respect to the operations described in **FIG. 6**. Billing program **113** utilizes the results from this analysis and generates the CER. The CER may also include the collected user event data associated with the third party content. This may be provided in a table or list indicating an aggregated number of user responses associated with predetermined activity fields. For example, in one embodiment, a CER for a third party entity having three versions of a content included in the Web page may include user activity data, as shown in Table 3.

TABLE 3

	User Response Data Analysis				
	Number of Web Page renderings	AVG % of Web page rendering time the content is 100% viewable	AVG % of content that is viewable	Total Click-throughs	AVG % of Web page rendering time a mouse pointer is positioned within content
Content Version 1	5,000	78%	84%	982	10%
Content Version 2	5,000	52%	50%	755	8%

TABLE 3-continued

	User Response Data Analysis				
	Number of Web Page renderings	AVG % of Web page rendering time the content is 100% viewable	AVG % of content that is viewable	Total Click-throughs	AVG % of Web page rendering time a mouse pointer is positioned within content
Content Version 3	5,000	15%	25%	126	26%

[0179] As shown in the example above, a CER may provide each third party entity **180** with information on the effectiveness of several versions of content provided by a third party entity. In Table 3, Version 1 of the content is in a position in the Web page that receives a large proportion of viewable rendering time. Specifically, in this example Version 1 is completely viewable on the average, 78% of the time the Web page is rendered on the users' client nodes, while on the average 84% of the actual content of Version 1 is viewable. Analytical program **115** utilizes the detailed user response data from each client node receiving the Web page, and computes in-view statistics, such as described above, in order to provide the third party entities with useful marketing analysis information. The types of statistical information computed and provided by Web server **110** may vary, and are not limited to the examples described above.

[0180] The CER may also include suggestions on changes to the contents based on the information computed by the analytical program **115**. Such changes may include changing the color, font, multimedia features, rendering time, position and any other modifications that may result in increased activity for the rendered content. Suggestions within the CER may include eliminating a version of content entirely as well. For example, referring to Table 1, Version 3 may need to change its position based on the statistic of being 100% viewable on the average only 15% of the Web age's rendering time. Accordingly, analytical program **115** may suggest to position the content further up on the Web page to make it more accessible by users. As described, analytical program **115** may generate a plurality of suggestions based on the collected user response data, and are not limited to the examples described above.

[0181] On the other hand, if a third party entity **180** is providing the content through an identifier, such as a URL, Web server **110** will not know what type of content is provided. In this case, Web server **110** would provide statistical information regarding the in-view characteristics of the third party entity's content, and enable the entity to utilize the information for determining whether changes are needed in their content.

[0182] Returning back to **FIG. 8**, once the billing record is created, and a CER is included if needed, the billing record is sent to each third party entity **180** for billing (Step S.**860**). Billing program **113** may send the billing records periodically, wherein the frequency of delivery may be determined by each third party entity, or the billing records may be sent in response to a server side trigger, such as a subsequent request for the Web page including the third party content. The billing record delivery features may include a variety of options and are not limited by the examples listed above. For instance, billing record or statistical information, may be sent to third party entities without the use of network **140**. In this case, any other well known means of communications may be implemented to deliver the reports to the third party entity. That is, the provider of Web server **110** would enable the reports to be created in a medium consistent with a third party entity's needs, and deliver the reports accordingly. For example, if postal services are being implemented, the reports created by Web server **110** would be put in hard copy form and mailed to the appropriate third party entity **180**.

[0183] In an alternate embodiment of the invention, a third party entity's CEP may arrange for Web server **110** to perform an automatic update to the third party content using the analytical program rules described above with reference to **FIG. 6**. Thus, Web server **110** would be employed by the third party entity **180** to determine modifications needed for increasing the effectiveness of the third party content, and implement the changes automatically. In this case, the CER would indicate to the third party entity the changes implemented by the Web server, and the results of the changes based on the analysis by the analytical program **112**.

[0184] As described, methods, systems and articles of manufacture consistent with the present invention enable a Web server the tools to provide Web content provision for third party entities while incorporating a detailed, equitable and attractive billing process that ensure the third party entities are delivered services they pay fees for. In, addition to customized content billing, methods, systems and articles of manufacture consistent with the present invention also provide the third party entities proposed effectiveness reports and suggestions for increasing the effectiveness of the third party content rendered by the Web server. Thus, third party entities may utilize the advantages of the analysis performed by methods, systems and articles of manufacture consistent with the present invention to adjust the third party content to better target users.

[0185] The foregoing description of an implementation of the invention has been presented for purposes of illustration and description. It is not exhaustive and does not limit the invention to the precise form disclosed. Modifications and variations are possible in light of the above teachings or may be acquired from practicing of the invention. For example, the described implementation includes software but the present invention may be implemented as a combination of hardware and software or in hardware alone. The invention may be implemented with both object-oriented and non-object-oriented programming systems. Additionally,

although aspects of the present invention are described as being stored in memory, one skilled in the art will appreciate that these aspects can also be stored on other types of computer-readable media, such as secondary storage devices, like hard disks, floppy disks, or CD-ROM; a carrier wave from the Internet or other propagation medium; or other forms of RAM or ROM. The scope of the invention is defined by the claims and their equivalents.

1-13. (canceled)

14. A system for performing dynamic Web-based marketing, the system comprising:

a Web server for providing a Web page over a network, wherein the Web page includes content;

a plurality of third party nodes connected to the network;

a first plurality of users, each user located at a respective client node, for requesting and viewing the content in the Web page provided by the Web server, wherein each client node is connected to the Web server through the network;

a first client side program, executed at each client node, for collecting user response data associated with the content in the Web page provided to each client node, and sending the collected user response data to We a first server side data store via the Web server as event data; and

an analytical program, executing in the Web server, for analyzing the event data to determine user in-view characteristic data reflecting whether the content was visible or partially visible by each respective user, and to determine a proportion of the content that was visible when the content was only partially visible by a respective user, and producing result data in response to the analysis of the event data, wherein the result data is based on at least the analysis of the user in-view characteristic data.

15. The system of claim 14, further comprising a billing program, executing in the Web server, for receiving the content from at least one of the plurality of third party nodes, generating billing records based on the analysis of the event data, and sending the billing records to at least one of the plurality of third party nodes.

16. The system of claim 15, wherein the content includes a plurality of third party content, each third party content associated with a respective one of the plurality of third party nodes, and wherein the billing records include a plurality of third party billing records, each third party billing record associated with a respective third party content, and wherein sending the billing records by the billing program further includes sending each third party billing record to a respective third party node.

17. The system of claim 15, wherein generating billing records further includes generating a content effectiveness record associated with the content, and wherein the billing program appends the content effectiveness record to at least one of the billing records, wherein the content effectiveness record includes data reflecting the effectiveness of the content based on the analysis of the user initiated responses.

18. The system of claim 17, wherein the content effectiveness record includes information associated with the user in-view characteristic data related to the content.

19. (canceled)

20. The system of claim 14, wherein the user in-view characteristic data include information associated with at least one of user mouse position data, user screen scrolling position data and time data associated with the mouse position and screen scrolling position data.

21. The system of claim 17, wherein the content effectiveness record includes a report indicating a plurality of user activities associated with the content and information indicating proposed changes to the content based on the user activities.

22. The system of claim 21, wherein the proposed changes includes suggestions to modify selected attributes of the content.

23. The system of claim 22, wherein the selected attributes include attributes associated with at least one of rendering time, document structure, wireless card structure, titles, headings, paragraphs, lines, lists, tables, links, graphics, objects, multimedia, scripts, forms, frames, colors, wording, size, positioning, background properties, border properties, font properties and text properties.

24-25. (canceled)

26. The system of claim 14, wherein collecting user response data by the client side program further includes collecting, for each user, non-activated user in-view response data reflecting user response data that is not associated with a user activating a button, icon or hyperlink on the Web page.

27-72. (canceled)

73. The system of claim 14, wherein the Web server provides the modified content in response to receiving a subsequent request from a client node to view the Web page.

74. The system of claim 14, wherein the Web server further includes:

a rule database including content rules for controlling the content provided by the Web server, and

wherein the analytical program modifies the content according to the determined user in-view characteristics based on the content rules.

75. The system of claim 14, wherein the analytical program modifies at least one of the following of the content: rendering time, document structure, wireless card structure, titles, headings, paragraphs, lines, lists, tables, links, graphics, objects, multimedia, scripts, forms, frames, colors, wording, size, positioning, background properties, border properties, font properties and text properties.

76. A method for monitoring in-view characteristics of content included in a web page, comprising:

displaying a Web page including content having a target component on a display device of a computer system operated by a user;

monitoring user response data associated with the content in the Web page to determine a proportion of the target component that is displayed on the display device when the target component is only partially visible by the user; and

modifying the content of the Web page based on the user response data and determined proportion of the target component.

77. The method of claim 76, wherein the monitoring is performed by the computer system.

78. The method of claim 76, wherein monitoring is performed by a server computer remotely located by the computer system.

79. A method for performing dynamic Web-based marketing, comprising:

providing a Web page including content having a target component;

requesting, by a plurality of client computers, the Web page;

displaying the Web page on a display device associated with each of the client computers, respectively;

monitoring, for each of the client computers, user response data associated with the content in the Web page to determine a proportion of the target component that is displayed on the client computer's display device when the target component is only partially visible by a user operating the client computer; and

modifying the content of the Web page based on the user response data and determined proportion of the target component for each client computer.

80. The method of claim 79, wherein the displayed proportion of the target component is determined by each respective client computer.

81. The method of claim 79, wherein a server computer located remotely from the client computer determines the displayed portion of the target component for each of the client computers that only partially displayed the target component.

82. A system for monitoring in-view characteristics of content included in a web page, comprising:

a client computer, operated by a user, that displays a Web page including content having a target component on a display device, the client computer monitoring user response data associated with the content in the Web page to determine a proportion of the target component that is displayed on the display device when the target component is only partially visible by the user; and

a server computer that modifies the content of the Web page based on the user response data and determined proportion of the target component.

83. A system for monitoring in-view characteristics of content included in a web page, comprising:

a client computer, operated by a user, that displays a Web page including content having a target component on a display device, the client computer monitoring user response data associated with the content in the Web page; and

a server computer that determines a proportion of the target component that is displayed on the display device when the target component is only partially visible by the user and modifies the content of the Web page based on the user response data and determined proportion of the target component.

84. The system of claim 82, further including:

a plurality of client computers, operated by respective users, that each displays the Web page including the content having the target component on a respective display device, each client computer monitoring, for each respective user, user response data associated with the content in the Web page and determines a proportion of the target component that is displayed on the respective display device when the target component is only partially visible by the respective user, wherein

the server computer modifies the content of the Web page based on the user response data and determined proportion of the target component for each client computer.

85. The system of claim 83, further including:

a plurality of client computers, each operated by a respective user, that displays the Web page including the content having a target component on a respective display device, each client computer monitoring user response data associated with the content in the Web page, wherein

the server computer determines, based on the user response data for each client computer, a proportion of the target component that is displayed on each display device when the target component is only partially visible by the respective user of the client computer, and modifies the content of the Web page based on the user response data and determined proportion of the target component for each client computer.

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