IN THE UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF TEXAS
MARSHALL DIVISION

LEXOS MEDIA IP, LLC, Plaintiff, v. AMAZON.COM, INC., Defendant.	Civil Action No. 2:22-CV-00169-JRG (Lead Case)
LEXOS MEDIA IP, LLC, Plaintiff, v. TARGET CORPORATION, Defendant.	Civil Action No. 2:22-CV-00175-JRG (Member Case)
LEXOS MEDIA IP, LLC, Plaintiff, v. OFFICE DEPOT, LLC, Defendant.	Civil Action No. 2:22-CV-00273-JRG (Member Case)

DEFENDANTS' RESPONSE TO MOTION FOR ORDER FOCUSING PRIOR ART REFERENCES AND OPPOSED CROSS-MOTION FOR LEAVE TO AMEND INVALIDITY CONTENTIONS

TABLE OF CONTENTS

PAGE

I. INTRODUCTION

Defendants Amazon.com, Inc., Office Depot, LLC, and Target Corp. ("Defendants") do not oppose narrowing the number of asserted prior art references in compliance with the Court's Model Order. But Defendants seek leave to amend their invalidity contentions to add, as part of that narrowing, two references that Lexos has been aware of for months, and in one case years. One of these references is already properly in the case for a patent that Lexos has belatedly asserted, but Defendants are seeking leave to also assert that same reference against the two patents that Lexos asserted earlier. Allowing the proposed amendments is fair because Defendants were diligent in discovering the art. The amendment will also avoid juror confusion because the jury will be able to apply to all asserted claims art that it will have to consider anyway. And the amendment will not prejudice Lexos because Lexos has long been aware of the prior art and will have plenty of time to respond to it given the procedural posture of this case.

II. THE NARROWING OF PRIOR ART REFERENCES

As to the narrowing of prior art references, Lexos's proposal does not align with the Court's Model Order Focusing Patent Claims and Prior Art to Reduce Costs ("Model Order"). The Model Order requires:

> By the date set for the service of expert reports by the party with the burden of proof on an issue, the patent defendant shall serve a Final Election of Asserted Prior Art, which shall identify no more than ***six*** asserted prior art references per patent from among the twelve prior art references previously identified for that particular patent and no more than a total of 20 references.

Instead of following the Model Order, Lexos asks the Court to limit Defendants to five prior art references per patent. (Dkt. 111 at 1.) Additionally, when Lexos emailed Defendants about this proposal, they asked that Defendants make their prior art selections by August 25, well in advance of the September 12 deadline that is called for under the Model Order (i.e., the date when opening

expert reports are due). (Shvodian Decl. Ex. 1 (the proposed order Lexos sent Defendants).)[1] Defendants therefore ask the Court to enter an order consistent with the Model Order, which requires that at the time of Defendants' opening expert reports, each Defendant assert no more than six prior art references per patent.

III. CROSS-MOTION FOR LEAVE TO AMEND INVALIDITY CONTENTIONS

As part of the Final Election of Asserted Prior Art, Defendants seek leave to amend their invalidity contentions to include two additional prior art references. The first reference concerns a prior art system that Lexos learned of during a litigation in 2014. The second reference is a prior art patent that Defendants did not discover until after the service of their invalidity contentions, but which Defendants disclosed to Lexos months ago.

A. Factual Background

In its initial Complaints, Lexos asserted two patents, U.S. Patent Nos. 5,995,102 ("the '102 patent") and 6,118,449 ("the '449 patent"). (Dkt. 1 at 5.)[2] The Docket Control Order (DCO) required Defendants to serve their invalidity contentions on November 7, 2022. (Dkt. 48 at 5.)

In preparation for the invalidity contentions, counsel for Defendants pursued numerous avenues to identify relevant prior art references. Defendants analyzed and conducted further research regarding the prior art identified by a prior art search firm. (Shvodian Decl. at ¶ 4.) Defendants also analyzed prior art cited in invalidity contentions from prior cases concerning the '102

[1] While Lexos's motion contains a Certificate of Conference (Dkt. 111 at 6), Lexos did not request or conduct the requisite in-person or telephonic conference before filing its motion. And though the parties exchanged emails on this issue, Lexos then filed a motion asking for different relief from the Court (i.e., a different date by which Defendants must make the election) than Lexos requested from Defendants in writing. (*See* Ex. 1.)

[2] The citations to documents and the Docket in this motion refer to documents from the Amazon matter, but the relevant facts are the same for Office Depot and Target matters.

and ’449 patents and to which Defendants had access. (*Id*.) And Defendants conducted their own searches and analyses of potential prior art based upon numerous search-word combinations, prior art cited on other patents related to cursor technology, and prior art identified by publicly available programs, such as Google patents. (*Id*.) Based upon those efforts, Defendants prepared and served their invalidity contentions for the ’102 and ’449 patents.

Shortly before the deadline for Defendants to serve their invalidity contentions for the ’102 and ’449 patents, Lexos produced over 58,000 pages of documents. Lexos, however, did not provide adequate meta data for those pages such that they could be organized into documents; instead they could only be reviewed as single page tiffs on a page-by-page basis. (*Id*. at ¶ 5.) Thus, Defendants were unable to conduct a review of those documents prior to Defendants’ service of their invalidity contentions.

On December 27, 2022, Lexos served its Second Amended Complaint in which it added an assertion of infringement of U.S. Patent No. 7,975,241 (“the ’241 patent”). (Dkt. 70 at 3.) The parties subsequently agreed that Defendants would serve their invalidity contentions for the ’241 patent by February 13, 2023. By that time, Defendants had reviewed Lexos’s document production, including two deposition transcripts from Lexos’s litigation against Zynga. Those transcripts were from the two depositions of Stephen Bullock, the president of Adveractive, Inc. As discussed in Mr. Bullock’s deposition transcripts, Adveractive created computer games for companies as a means of marketing for those companies, and in those games, the shape of the cursor image was modified from an initial shape to a modified shape that related to other information displayed on the screen. Therefore, Defendants included the Adveractive system as prior art in their invalidity contentions for the ’241 patent.

Though the invalidity contentions had been served, Defendants continued to search for relevant prior art and subsequently located U.S. Patent No 5,937,417 to Nielsen ("Nielsen"). (Shvodian Decl. Ex. 2.) Nielsen was filed on May 7, 1996, over a year before the earliest filing date for the Lexos patents. Nielsen disclosed a system that operated in the web page context, which is particularly relevant given that Lexos has accused Defendants' web page systems and functionality of infringement. (*See, e.g.*, *id*. at Abstract ("A method and apparatus that allows a Web Page designer to specific tooltips for his Web page.").) When Amazon filed petitions for inter partes review of the '102 and '449 patents on June 5, 2023, Amazon relied upon Nielsen as one of the three prior art references relied upon in those petitions. So Lexos has been aware of Nielsen and Defendants' invalidity theories based upon that reference since June 5.

IV. LEGAL STANDARD

Other than for reasons set forth in Patent Local Rule 3-6(a), amendments or supplementations of invalidity contentions can be made on order of the Court, which shall be entered on a showing of good cause. *Garrity Power Servs. LLC v. Samsung Elecs. Co.*, No. 2:20-cv-00269-JRG, 2021 WL 4894262, at *2 (E.D. Tex. Oct. 19, 2021). In addressing whether good cause exists for a proposed amendment, this Court has held that the following factors apply:

> Courts routinely consider four factors to determine whether good cause has been shown: (1) the explanation for the party's failure to meet the deadline, (2) the importance of what the Court is excluding, (3) the potential prejudice if the Court allows that thing that would be excluded, and (4) the availability of a continuance to cure such prejudice.

(*Id*. at *1 (internal quotations omitted).)

V. ARGUMENT

A. Defendants Did Not Meet the Invalidity Contentions Deadline for the Two Prior Art References Because Defendants Were Unaware of the References at that Time.

As discussed above, Defendants diligently searched for and analyzed prior art references to assert against the patents-in-suit. Despite that diligence, Defendants did not locate information relating to Adveractive or its games, likely because researching or searching for information regarding the modification of cursor images does not lead to Adveractive or its games. The changing of cursor images was simply a feature inherent in the Adveractive game play.

Similarly, despite that diligence, Defendants did not locate Nielsen until after service of their invalidity contentions for all three patents-in-suit. While one can never definitively say why a reference was not located, Defendants likely did not locate Nielsen because it discloses downloading a web page that contains instructions for displaying Tooltips, which are small pop-up windows that contains textual or graphical information about an object that the cursor is pointing to. Defendants contend that it would have been obvious to combine the teachings of Nielsen with teachings of other references regarding modifying cursor images, such that the Tooltip is displayed as part of a modified cursor image, thereby demonstrating that each asserted claim is obvious.

Therefore, the reason that Defendants did not include the Adveractive system and games in the invalidity contentions for the ’102 and ’449 patents and did not include Nielsen in the invalidity contentions for all three patents was because, despite diligently searching for prior art, they

did not become aware of these references until later in time.[3] *Estech Sys., Inc. v. Target Corp.*, No. 2:20-CV-00123-JRG-RSP, 2021 WL 2187978, at *3 (E.D. Tex. May 28, 2021) ("[A]ge and difficulty in unearthing prior art is a factor to be considered in determining whether good cause has been shown to supplement invalidity contentions . . . .").

B. The Two References Are Important Prior Art References.

The two references that Defendants seek to add to their invalidity contentions are important references that will permit the trier of fact to fully assess the validity of the three patents-in-suit that Lexos has asserted against numerous e-commerce retailers. *Uniloc 2017 LLC v. Google LLC*, No. 2:18-cv-00493-JRG-RSP, 2019 WL 6465318, at *2 (E.D. Tex. Dec. 2, 2019) ("Prior art references potentially rendering a patent invalid are important."). Adveractive is an important reference because it is a prior art system whose features can be demonstrated at trial. Nielsen is also important because, like the patents-in-suit, it describes a web page system and method for displaying additional information concerning an object pointed to by a cursor, with Nielsen displaying the information as part of a Tooltip display. In assessing the validity and value of the alleged inventions in the patents-in-suit, it will be important for the trier of fact to consider whether the alleged inventions would have been valid in view of the Adveractive and Nielsen references. In addition, both references, and particularly Adveractive, will assist the jury's understanding of the state-of-the-art at the time. *See Maxell Ltd. v. Apple Inc.*, No. 5:19-CV-00036-RWS, 2020 WL

[3] Defendants did not move to amend their invalidity contentions earlier because Lexos was aware of both references, having seen Adveractive charted against the patents in 2014 in the Zynga litigation, and having seen Nielsen charted in the Amazon IPRs. Additionally, Defendants did not know how the Court would construe the claims and if that would necessitate further amendment. But given that the Markman hearing date has been delayed until the near the end of discovery and because Lexos has moved to limit the number of prior art references, Defendants are raising the issue now in the context of all parties' desire to narrow the case to the issues most likely to be presented at trial.

10456917, at *3 (E.D. Tex. Feb. 24, 2020) ("Clarity to the trier of fact is important."); *Uniloc 2017*, 2019 WL 6465318, at *2. Finally, the Aderactive system will already be part of this case with respect to the '241 patent, so the trier of fact will have to consider it regardless. It makes no sense to artificially restrict the trier of fact's ability to give full effect to Aderactive in evaluating the validity of all asserted patents.

C. Lexos Will Not Be Prejudiced by the Amendment.

Lexos has been aware of the Adveractive prior art system and games since 2014, when Zynga identified it as a prior art reference. During that litigation, Zynga deposed Stephen Bullock, the president of Adveractive, about the system and games on June 12, 2014. Lexos then deposed Mr. Bullock for a second day on August 7, 2014. Lexos has therefore been well aware of Adveractive and would not be prejudiced by Defendants' use of that reference in this case. Significantly, because Defendants included the Adveractive reference as part of their invalidity contentions for the '241 patent, it will be in this case regardless, thereby resulting in minimal, if any, prejudice. *See Seven Networks, LLC v. Google LLC*, No. 2:17-CV-00442-JRG, 2018 WL 3327927, at *2 (E.D. Tex. July 6, 2018) ("the prejudice faced by [plaintiff] will be minimal, as this prior art will be in the case regardless.").

Lexos has also been aware of Nielsen since at least June 5, 2023 when Amazon filed IPR petitions against the '102 and '449 patents. Nielson was one of three prior art references asserted in those petitions, and Amazon specifically explained how the combination of Nielsen and Malamud (U.S. Patent No. 6,437,800) rendered the asserted claims obvious. Because Lexos has been aware of Nielsen and how it invalidates the asserted claims, Lexos will not suffer any prejudice if Defendants are permitted to include it in their invalidity contentions.

Moreover, this motion will not materially impact the proceedings in this case. Defendants' request comes prior to the close of fact discovery or service of expert reports. The parties' opening

expert reports are not due until September 12, 2023. In addition, Lexos's rebuttal expert report addressing the invalidity of the patents-in-suit is not due until October 2, giving Lexos plenty of time to assess the references. And no additional discovery should be required as Lexos as long been aware of both the Adveractive and Nielsen references. The timing of Defendants request combined with the lack of prejudice to Lexos weighs in favor of granting this motion.

D. There Is No Prejudice to Be Cured.

As discussed in the preceding section, Lexos has long been aware of the two prior art references, so there is no potential prejudice that would need to be cured.

VI. CONCLUSION

For the foregoing reasons, Defendants respectfully request that, when they narrow the number of prior art references to six, that Defendants be permitted to include the Adveractive and Nielsen references, alone or in combination with other previously disclosed references.

Dated: August 14, 2023

Respectfully submitted,

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Dated: August 14, 2023

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CERTIFICATE OF CONFERENCE

The undersigned hereby certifies that lead and local counsel for the parties met and conferred through email and during a teleconference on August 4, 2023 regarding Defendants' motion to amend their infringement contentions. No agreement was met, and Lexos confirmed by email after the meeting that Lexos opposes the motion.

/s/Janice L. Ta
Janice L. Ta

CERTIFICATE OF SERVICE

The undersigned hereby certifies that a true and correct copy of the above and foregoing document has been served August 14, 2023 to all counsel of record, via the Court's CM/ECF system.

/s/Janice L. Ta
Janice L. Ta

IN THE UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF TEXAS
MARSHALL DIVISION

LEXOS MEDIA IP, LLC, Plaintiff, v. AMAZON.COM, INC., Defendant.	Civil Action No. 2:22-CV-00169-JRG (Lead Case)
LEXOS MEDIA IP, LLC, Plaintiff, v. TARGET CORPORATION, Defendant.	Civil Action No. 2:22-CV-00175-JRG (Member Case)
LEXOS MEDIA IP, LLC, Plaintiff, v. OFFICE DEPOT, LLC, Defendant.	Civil Action No. 2:22-CV-00273-JRG (Member Case)

DECLARATION OF DANIEL T. SHVODIAN IN SUPPORT OF DEFENDANTS' RESPONSE TO MOTION FOR ORDER FOCUSING PRIOR ART REFERENCES AND OPPOSED CROSS-MOTION FOR LEAVE TO AMEND INVALIDITY CONTENTIONS

I, Daniel T. Shvodian, declare:

1. I am an attorney with the law firm of Perkins Coie LLP, counsel of record for Defendants Office Depot, LLC and Amazon.com, Inc. I submit this Declaration in support of Defendants' Response to Motion for Order Focusing Prior Art References and Opposed Cross-Motion for Leave to Amend Invalidity Contentions.

2. Attached as Exhibit 1 is a true and correct copy of the Proposed Order attached to the July 25, 2023 email from Eric Buether, counsel for Lexos, to Defendants.

3. Attached as Exhibit 2 is a true and correct copy of U.S. Patent No. 5,937,417 to Nielson.

4. Before Defendants began preparing the invalidity contentions in this case, counsel for Defendants pursued numerous avenues to identify relevant prior art references. Defendants reviewed the available invalidity contentions from prior cases concerning the patents-in-suit. Defendants analyzed the results of prior art search conducted by a third-party search firm. And counsel for Defendants spent many hours searching using various word combinations, reviewing prior art cited against patents concerning similar subject matter, and using online tools to try to locate relevant prior art.

5. Shortly before Defendants served their invalidity contentions for the '102 and '449 patents, Lexos produced over 58,000 pages of documents. Lexos did not provide adequate meta data for those pages, so the pages could not be organized into documents. They could only be reviewed as single page tiffs on a page-by-page basis. Defendants were therefore unable to conduct a review of those documents prior to Defendants' service of their invalidity contentions for the '102 and '449 patents.

I declare under penalty of perjury under the laws of the United States of America that the foregoing is true and correct.

Executed on August 14, 2023 at Palo Alto, California.

/s/ Daniel T. Shvodian
Daniel T. Shvodian

CERTIFICATE OF SERVICE

The undersigned hereby certifies that a true and correct copy of the above and foregoing document has been served August 14, 2023, to all counsel of record, via the Court's CM/ECF system.

/s/ Daniel T. Shvodian
Daniel T. Shvodian

IN THE UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF TEXAS
MARSHALL DIVISION

LEXOS MEDIA IP, LLC, Plaintiff, v. AMAZON.COM, INC., Defendant.	Civil Action No. 2:22-CV-00169-JRG (Lead Case)
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ORDER

Defendants' motion to amend their invalidity contentions to include the Adveractive system and games and the Nielsen patent (U.S. Patent No. 5,937,417) is granted.

EXHIBIT 1

IN THE UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF TEXAS
MARSHALL DIVISION

LEXOS MEDIA IP, LLC, v. AMAZON.COM, INC...,	Case No. 2:22-cv-00169-JRG (Lead Case)
LEXOS MEDIA IP, LLC, v. TARGET CORPORATION	Case No. 2:22-cv-00175-JRG (Member Case)
LEXOS MEDIA IP, LLC v. OFFICE DEPOT, LLC	Case No. 2:22-cv-00273-JRG (Member Case)

ORDER

IN CONSIDERATION of the JOINT STIPULATION TO FOCUS PATENT CLAIM TERMS AND PRIOR ART REFERENCES, the Court is of the opinion that said JOINT STIPULATION should be entered, and it is hereby ORDERED that:

1. On or before August 25, 2023, Plaintiffs shall serve a Final Election of Asserted Claims, which shall identify no more than five (5) asserted claims per asserted patent and no more than a total of ten (10) claims;

2. On or before August 25, 2023, Defendant shall serve a Final Election of Asserted Prior Art, which shall identify no more than five (5) asserted prior art references per asserted patent and no more than a total of twenty (20) references.

3. For purposes of the Final Election of Asserted Prior Art, each obviousness combination counts as a separate prior art reference.

IT IS SO ORDERED.

EXHIBIT 2

US005937417A

United States Patent [19]

Nielsen

[11] **Patent Number: 5,937,417**

[45] **Date of Patent: Aug. 10, 1999**

[54] **TOOLTIPS ON WEBPAGES**

[75] Inventor: **Jakob Nielsen**, Atherton, Calif.

[73] Assignee: **Sun Microsystems, Inc.**, Palo Alto, Calif.

[21] Appl. No.: **08/643,893**

[22] Filed: **May 7, 1996**

[51] **Int. Cl.**[6] **G06F 15/00**

[52] **U.S. Cl.** **707/513**; 707/501; 345/337; 345/338

[58] **Field of Search** 395/337, 338, 395/762, 774; 345/337, 338; 707/501, 513

[56] **References Cited**

U.S. PATENT DOCUMENTS

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5,434,965	7/1995	Matheny et al.	395/338
5,572,643	11/1996	Judson	707/531

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Gonzalex, Sean, "NCSA Mosaic (National Center for Supercomputing Applications' Internet Browser, version 2.0)", PC Magazine , pp. 191–192, Feb. 7, 1995.

McKinstry, Christopher, "tooltips (in client side image maps)", Web Page (cmckin@clickable.com), Nov. 2, 1995.

McKinstry; "tooltips (in client side image maps)"; http://www.acl.lanl.gov/HTML_WG/html–wg–95q4.messages/0462.html; (p. 1), Nov. 1995.

Primary Examiner—Mark K. Zimmerman
Assistant Examiner—Motilewa A. Good-Johnson
Attorney, Agent, or Firm—Graham & James LLP

[57] **ABSTRACT**

A method and apparatus that allows a Web page designer to specify tooltips for his Web page. Tooltips are text areas that display automatically when the user places the cursor over predetermined text on a display device. The invention also enables Web browser software to display the tooltips specified by the designer. The HTML format extension allows a Web page designer to specify the text over which the user must place the cursor to activate tooltips. The HTML extension also allows the designer to specify the tooltip text that will be displayed when the cursor reaches the specified text. Using the present invention, the designer only needs to specify tooltips for any given information once per page, even though the displayed information may appear multiple times on the Web page.

6 Claims, 9 Drawing Sheets

STATUS

ACCOUNT SUMMARY

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Userid: jn

Point Balance: 184243 as of 03/11/96

Points Earned Due to Flight Mileage

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	UA	01-FEB-96	0835	SFO	HKG	6914	8643	15557
	UA	16-DEC-95	0073	EWR	SFO	2565	2565	5130
	UA	09-DEC-95	0036	SFO	BOS	2704	2704	5408
	UA	21-NOV-95	0806	HKG	SFO	6914	8643	15557
	UA	15-NOV-95	0835	SFO	HKG	6914	8643	15557
	U+	15-NOV-95	2936	LAS	SFO	414	621	1035
304	U+	12-NOV-95	2188	SFO	LAS	414	414	828
	UA	10-NOV-95	0931	LHR	SFO	5368	6710	12078

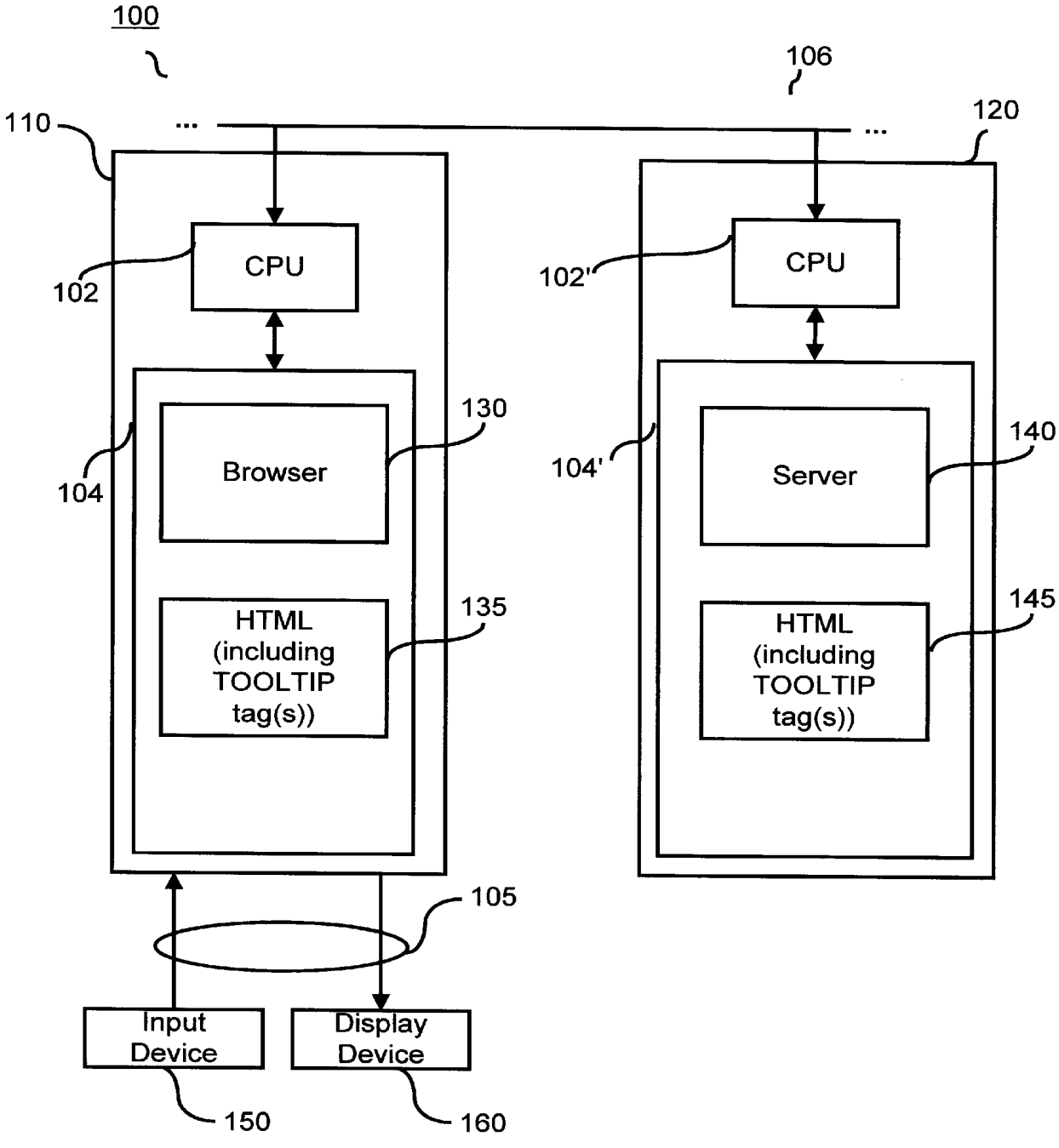
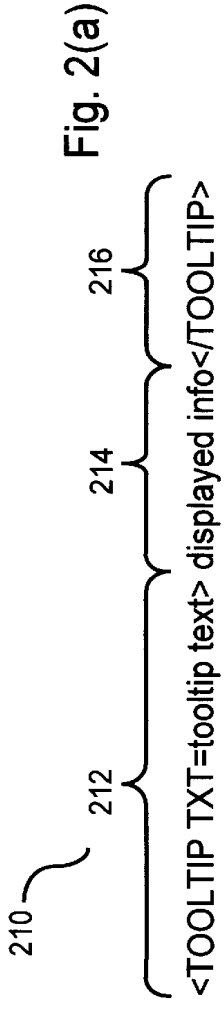


Fig. 1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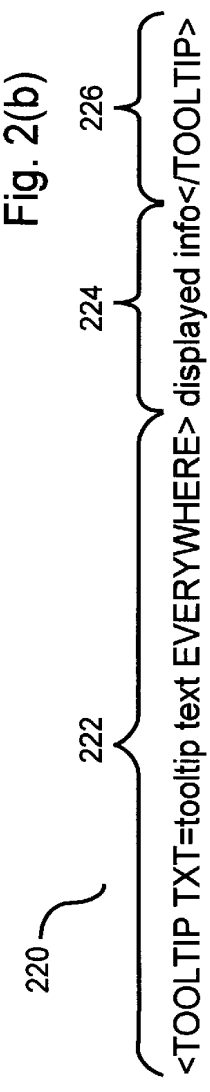
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224
226
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Fig. 2(c)
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Fig. 2(d)
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STATUS

ACCOUNT SUMMARY

FIG. 3

Name: Dr. Jakob Nielsen
Userid: jn

Point Balance: 184243 as of 03/11/96

Points Earned Due to Flight Mileage

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304

Carrier	Flight Date	Flight Number	From City	To City	Flight Miles	Bonus Miles	Total Miles
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UA	16-DEC-95	0073	EWR	SFO	2565	2565	5130
UA	09-DEC-95	0036	SFO	BOS	2704	2704	5408
UA	21-NOV-95	0806	HKG	SFO	6914	8643	15557
UA	15-NOV-95	0835	SFO	HKG	6914	8643	15557
U+	15-NOV-95	2936	LAS	SFO	414	621	1035
U+	12-NOV-95	2188	SFO	LAS	414	414	828
UA	10-NOV-95	0931	LHR	SFO	5368	6710	12078

STATUS

ACCOUNT SUMMARY

FIG. 4

Name: Dr. Jakob Nielsen
Userid: jn

Point Balance: 184243 as of 03/11/96

Points Earned Due to Flight Mileage

	Carrier	Flight Date	Flight Number	From City	To City	Flight Miles	Bonus Miles	Total Miles
302			London Heathrow					
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304	U+	12-NOV-95	2188	SFO	LAS	414	414	828
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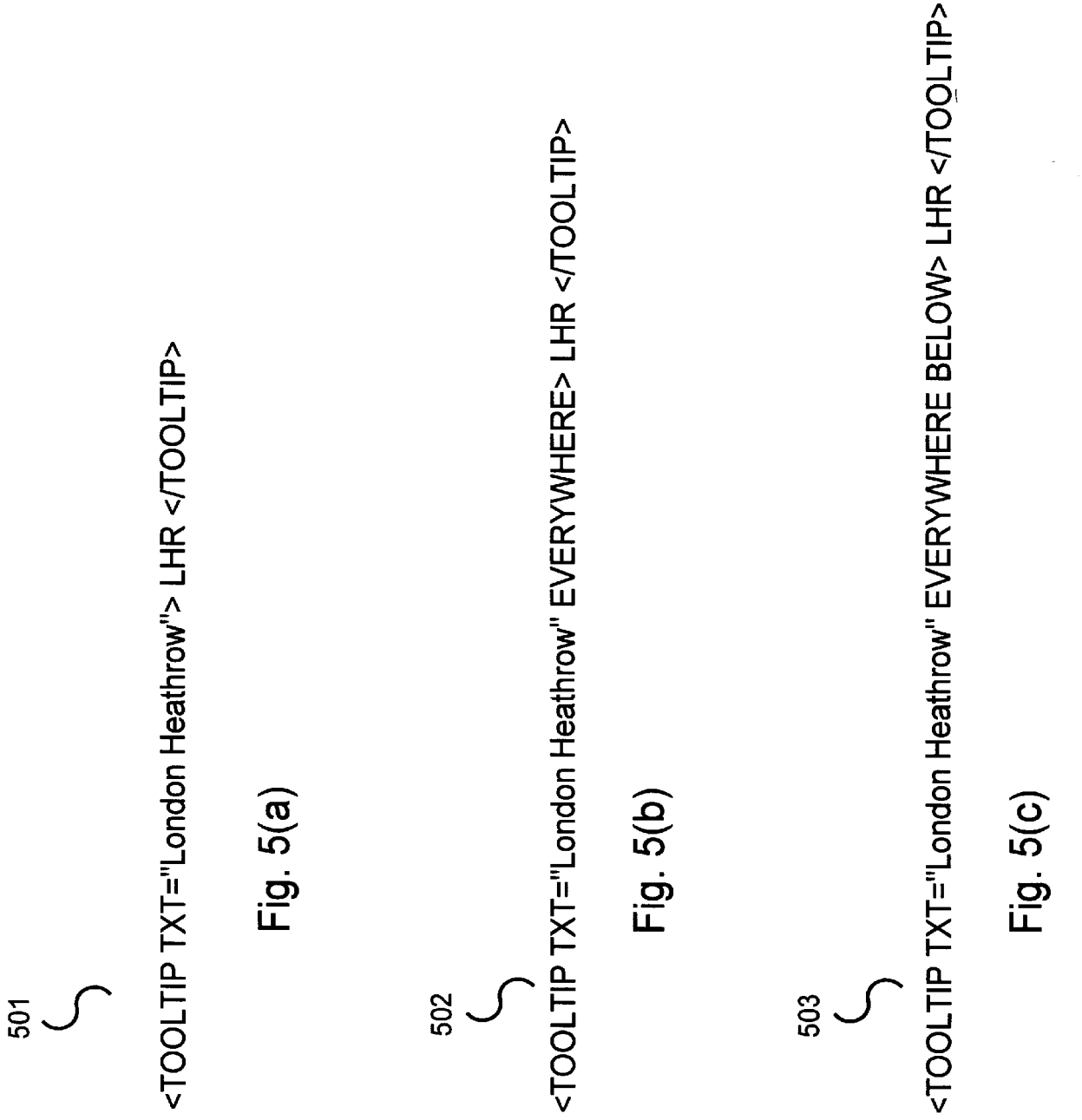

Fig. 5(a)

Fig. 5(b)

Fig. 5(c)

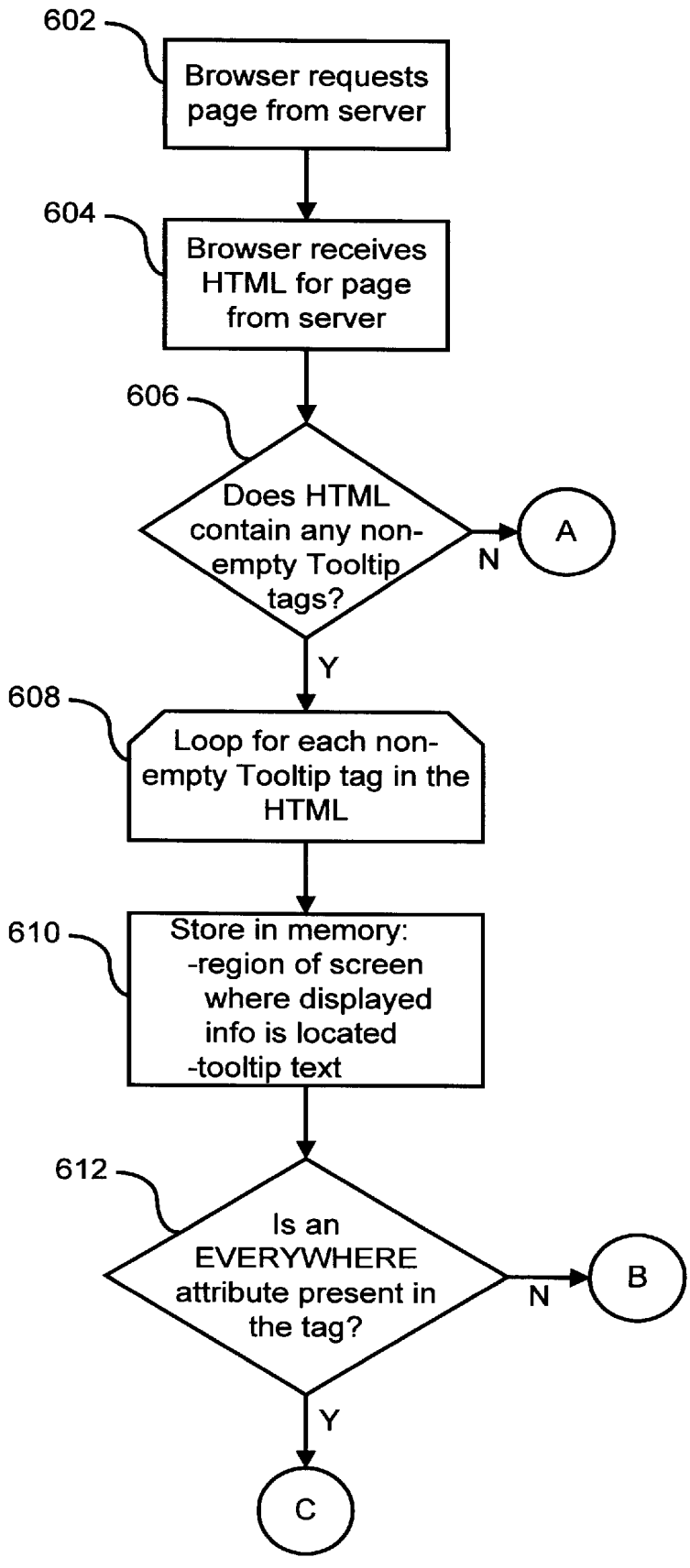

Fig. 6(a)

Preprocessing by Browser

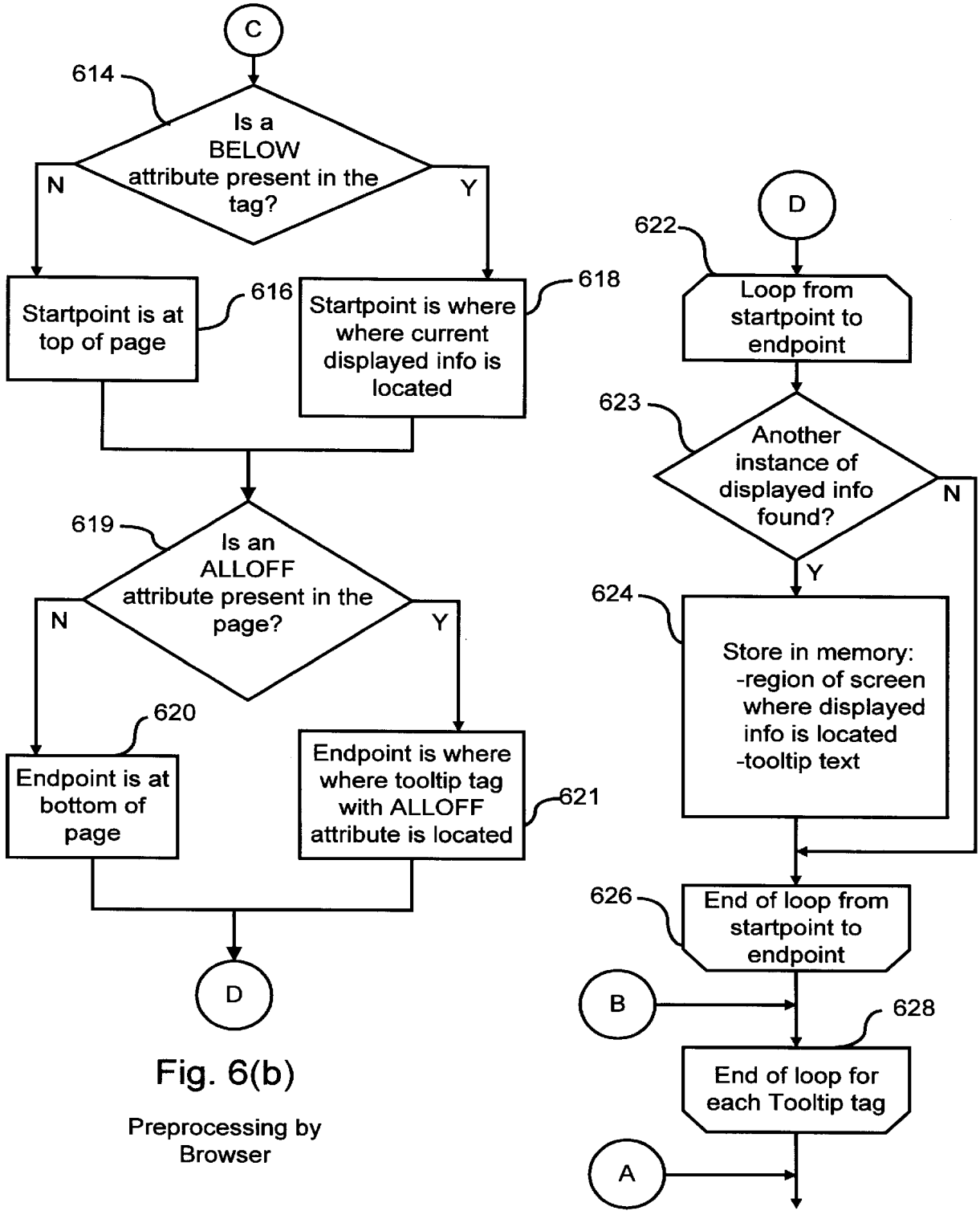

Fig. 6(b)

Preprocessing by Browser

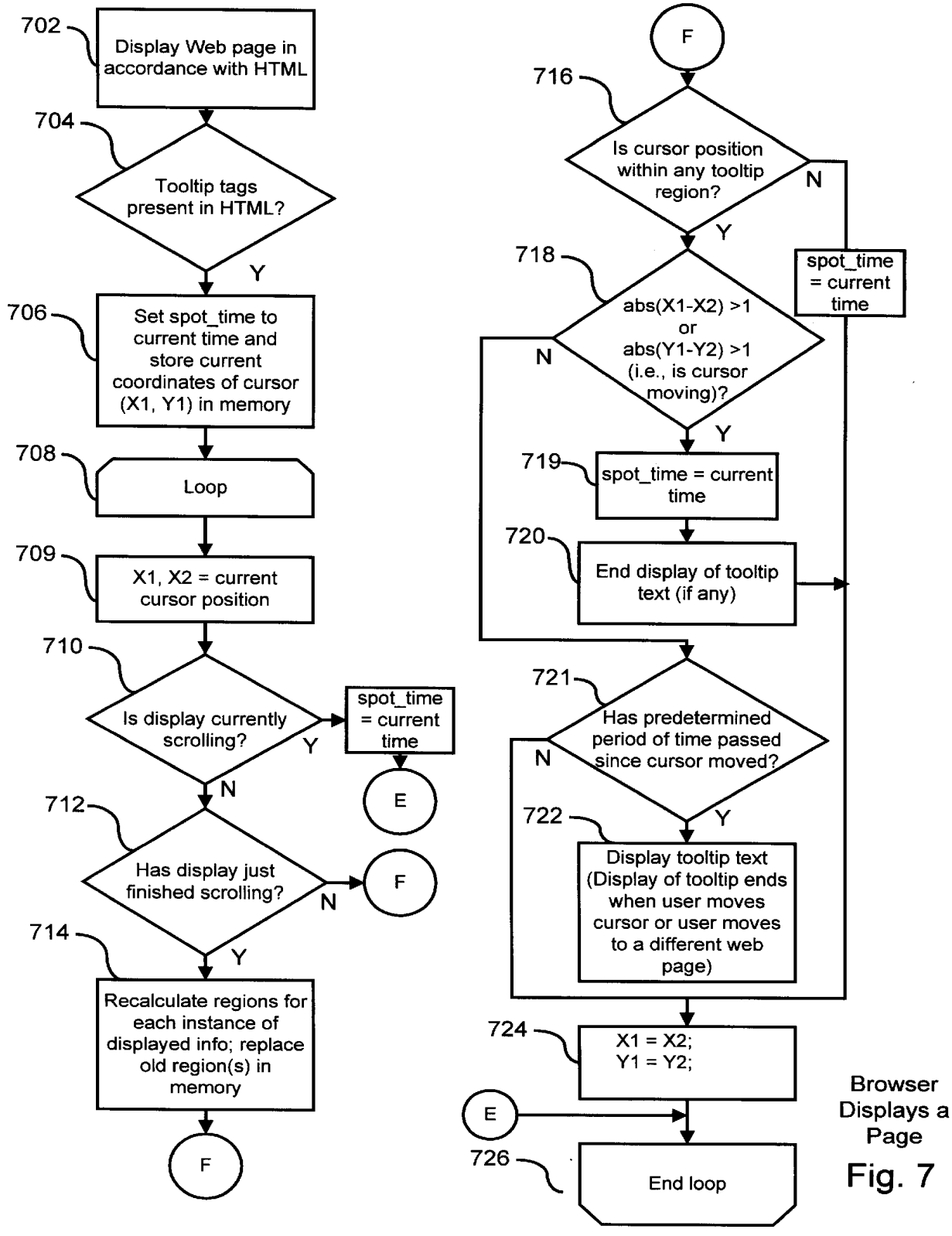
702
Display Web page in accordance with HTML
704
Tooltip tags present in HTML?
Y
706
Set spot_time to current time and store current coordinates of cursor (X1, Y1) in memory
708
Loop
709
X1, X2 = current cursor position
710
Is display currently scrolling?
Y
spot_time = current time
E
N
712
Has display just finished scrolling?
N
F
Y
714
Recalculate regions for each instance of displayed info; replace old region(s) in memory
F
F
716
Is cursor position within any tooltip region?
N
Y
718
abs(X1-X2) >1 or abs(Y1-Y2) >1 (i.e., is cursor moving)?
N
Y
spot_time = current time
719
spot_time = current time
720
End display of tooltip text (if any)
721
Has predetermined period of time passed since cursor moved?
N
Y
722
Display tooltip text (Display of tooltip ends when user moves cursor or user moves to a different web page)
724
X1 = X2; Y1 = Y2;
E
726
End loop
Browser Displays a Page

Fig. 7

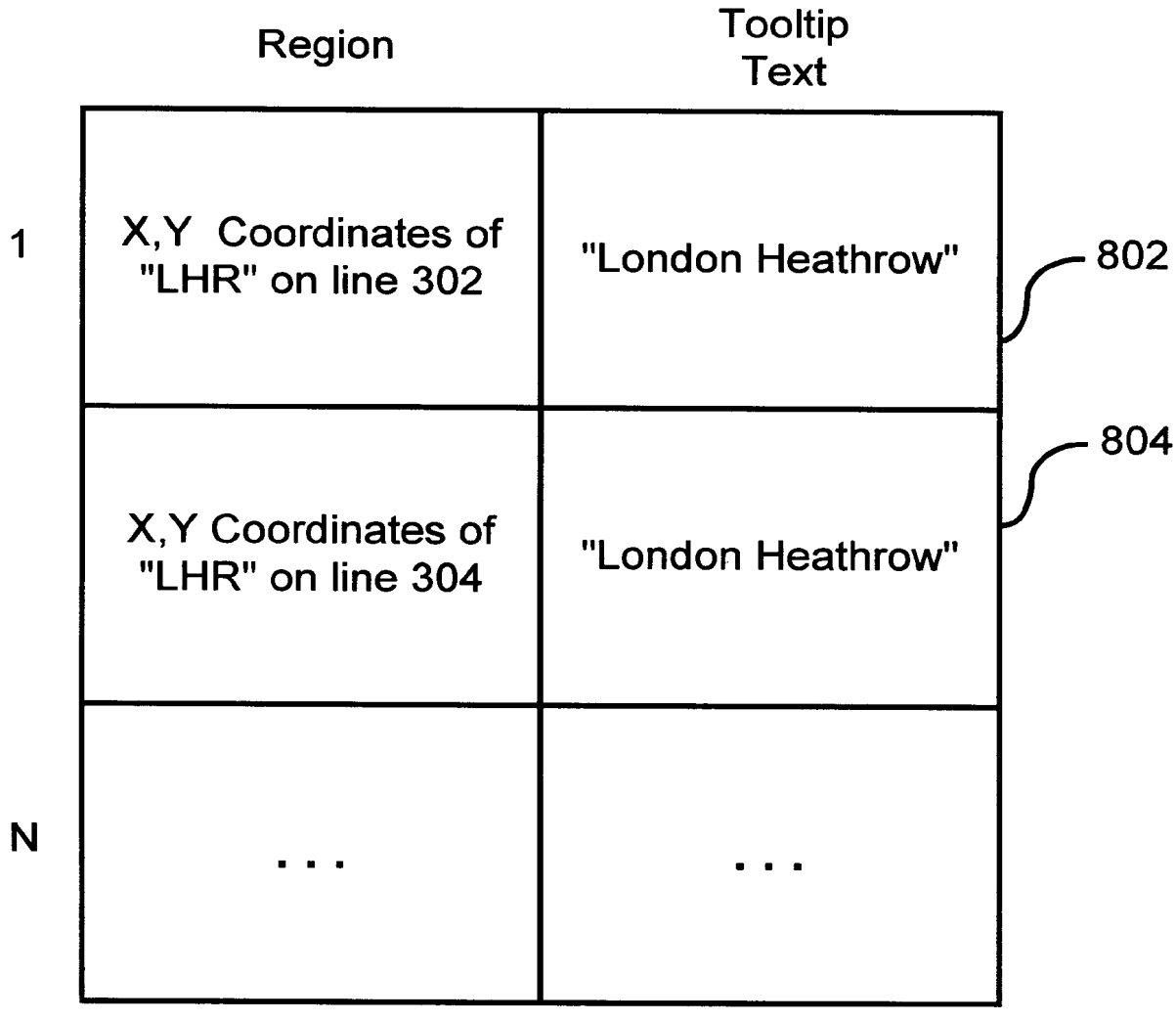
Region
Tooltip Text
1
X,Y Coordinates of "LHR" on line 302
"London Heathrow"
802
X,Y Coordinates of "LHR" on line 304
"London Heathrow"
804
N
. . .
. . .

Fig. 8

TOOLTIPS ON WEBPAGES

BACKGROUND OF THE INVENTION

This application relates to the World Wide Web and, in particular, to a software tool for improving the readability of documents on the Web.

The past several years have seen an explosive growth of the internet, and specifically, in the growth of the World Wide Web (hereafter "the Web"). The Web is built around a network of "server" computers which exchange requests and data from each other using the hypertext transfer protocol ("http"). A human designer designs the layout of a Web page and specifies the layout of the page using HTML ("Hypertext Markup Language"). Several versions of HTML are currently in existence. Examples include HTML versions 2.0 and 3.0, as specified by the WWW Consortium of MIT.

A user views a Web page using one of a number of commercially available "browser" programs. The browser submits an appropriate http request to establish a communications link with a Web server of the network. A typical http request references a Web page by its unique Uniform Resource Locator ("URL"). A URL identifies the Web server hosting that Web page, so that an http request for access to the Web page can be routed to the appropriate Web server for handling. Web pages can also be linked graphically to each other.

Information presentations on Web pages are often abbreviated or shortened in order to save space and to produce better layouts. Typical examples of abbreviated or shortened information include icons in the toolbars of applications running under a window system or the use of codes in statistical tables. Web pages in particular often include abbreviated forms of information because it is desirable to squeeze as much information as possible into a window without requiring the user to scroll the window.

If the user understands the code or abbreviation used in a Web page, then the information may be understood without any problems. Difficulties may arise, however, if the user does not understand the short form of the information. Designers of Web pages are used to being able to design pages by simple text editing and the use of human-readable HTML tags. What is needed is a convenient way for designers of Web pages to add additional information to their Webpages without having to understand the complex programming tools required to construct graphical user interfaces.

SUMMARY OF THE INVENTION

The present invention overcomes the problems and disadvantages of the prior art by adding an extension to HTML that allows a Web page designer to specify tooltips for the Web page. Tooltips are text areas that display automatically when the user places the cursor over predetermined text on a display device. The invention also enables Web browser software to display the tooltips specified by the designer. The HTML format extension allows a Web page designer to specify the text over which the user must place the cursor to activate tooltips. The HTML extension also allows the designer to specify the tooltip text that will be displayed when the cursor reaches the specified text. Using the present invention, the designer only needs to specify a tooltip for any given information once per page, even though the information may appear multiple times on the Web page.

In accordance with the purpose of the invention, as embodied and broadly described herein the invention is a method of processing HTML that describes a web page, comprising the steps performed by a data processing system, of: receiving HTML describing the web page; reviewing the HTML to locate a tooltip tag in the HTML, the tooltip tag identifying displayed info and associated tooltip information; storing in a memory of the data processing system the region of a display device at which the displayed info will be displayed; storing in the memory the tooltip information; and displaying the Web page in accordance with the HTML.

In further accordance with the purpose of this invention, as embodied and broadly described herein the invention is a method of specifying tooltips on a web page, comprising the steps of: determining a location on the web page for the information for which the tooltip is to be displayed; storing in a memory of a data processing system a tooltip tag having the format <TOOLTIP TXT=tooltip information> displayed info </TOOLTIP>, where the tooltip tag is stored in the memory in a location associated with the location of the displayed info on the web page.

Objects and advantages of the invention will be set forth in part in the description which follows and in part will be obvious from the description or may be learned by practice of the invention. The objects and advantages of the invention will be realized and attained by means of the elements and combinations particularly pointed out in the appended claims.

BRIEF DESCRIPTION OF THE DRAWINGS

The accompanying drawings, which are incorporated in and constitute a part of this specification, illustrate several embodiments of the invention and, together with the description, serve to explain the principles of the invention.

FIG. **1** is a block diagram of a computer system in accordance with a preferred embodiment of the present invention.

FIGS. **2**(*a*) through **2**(*d*) show respective formats of HyperText Markup Language (HTML) tooltip tags in accordance with the embodiment of FIG. **1**.

FIG. **3** shows an example of a Web Page displayed on a display device of FIG. **1**.

FIG. **4** shows an example of a Web Page with a tooltip displayed thereon in accordance with the present invention.

FIGS. **5**(*a*) through **5**(*c*) show respective examples of HTML tooltip tags in accordance with the formats of FIG. **2**.

FIGS. **6**(*a*) and **6**(*b*) are flow charts showing steps performed by browser software prior to displaying the Web Page of FIG. **3**.

FIG. **7** is a flow chart showing steps performed by the browser software to display the Web Page of FIG. **4**.

FIG. **8** shows an example of contents of a data structure stored in a memory of FIG. **1**.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

Reference will now be made in detail to the preferred embodiments of the invention, examples of which are illustrated in the accompanying drawings. Wherever possible, the same reference numbers will be used throughout the drawings to refer to the same or like parts.

FIG. **1** is a block diagram of a computer system **100** in accordance with a preferred embodiment of the present invention. Computer system **100** includes a first computer **110** and a second computer **120**. First computer **110** and

second computer **120** are connected together via line **106**, which can be, for example, a LAN, WAN and an internet connection. Line **106** can also represent a wireless connection, such as a cellular network connection.

First computer **110** includes a CPU **102**; a memory **104**; input/output lines **105**; an input device **150**, such as a keyboard or mouse; and a display device **160**, such as a display terminal. Memory **104** of first computer **110** includes browser software **130** and Hypertext Markup Language (HTML) **135**. A person of ordinary skill in the art will understand that memory **104** also contains additional information, such as application programs, operating systems, data, etc., which are not shown in the figure for the sake of clarity.

Second computer **110** includes a CPU **102**' and a memory **104**'. Memory **104**' of second computer **120** includes server software **140** and Hypertext Markup Language (HTML) **145**. HTML **135** in the memory of first computer **110** was downloaded over line **106** from HTML **145** of second computer **120**. A person of ordinary skill in the art will understand that memory **104**' also contains additional information, such as application programs, operating systems, data, etc., which are not shown in the figure for the sake of clarity. Server **140** and HTML **145** can also be located in memory **104** of first computer **110**.

It will be understood by a person of ordinary skill in the art that computer system **100** can also include numerous elements not shown in the Figure for the sake of clarity, such as disk drives, keyboards, display devices, network connections, additional memory, additional CPUs, LANs, input/output lines, etc. A preferred embodiment of the invention runs under the Solaris operating system, Version 2.5. Solaris is a registered trademark of Sun Microsystems, Inc.

The present invention allows for the use of tooltips in Web Pages. Thus, any information displayed on display device **160** by browser **130** can have a tooltip associated therewith. When the user places the cursor on a predetermined location on display device **160** for a predetermined period of time, tooltip text is displayed, providing further explanation of the information at the predetermined location. In a preferred embodiment, Web Pages specified using the present invention can still be displayed using Web browsers that have not been enhanced to recognize tooltips because these browsers will simply ignore the tooltips tag.

FIG. **2** shows an example of formats of tooltip tags in HyperText Markup Language (HTML) in accordance with a preferred embodiment of the present invention. The format of conventional HTML is described in, for example, Morris, "HTML for Fun and Profit," SunSoft Press 1995, which is herein incorporated by reference. FIG. **2** shows three alternate HTML formats for a tooltip tag. A first format **210** includes a first text string **212** surrounded by brackets ("<" and ">"). The characters "TOOLTIP TXT =" are followed by tooltip information, specifying characters that are displayed on a Web Page as a tooltip. In a preferred embodiment having sufficiently fast access time, the tool information can also be a reference to a file name, such as "HREF=http://server.com/filename", but doing so is only recommended when it would take within 1.0 second after the user places the cursor over the anchor text for the tooltip to appear. A tooltip also could be an icon or other illustration, indicated by <TOOLTIP IMG SRC=foo.gif>.

Next, a second text string **214** (displayed info) identifies information that is displayed on a Web Page. The displayed info can identify any information that has a visual appearance on display device **160**, including images, literal character strings and, animations (given a system of sufficient response time). Thus, for example, tooltips can be used to explain an icon if the displayed information identifies a file containing the graphical information of an icon. Next, a third text string **216** surrounded by brackets ("<" and ">") consists of the string "/TOOLTIP" to indicate the end of the tooltip tag.

Second format **220** includes a first text string **222** surrounded by brackets ("<" and ">"). The first text string includes the characters "TOOLTIP TXT =" followed by characters that are displayed on a Web Page as a tooltip, followed by the string "EVERYWHERE". Next are second and third text strings **224**, **226** similar to those of the first format **210**. A tooltip tag having an EVERYWHERE attribute applies to all occurrences of the displayed info on the Web page. Thus, the page author need only author a single tooltip tag even if it is to be used to explain multiple occurrences of displayed information.

Third format **230** includes a first text string **232** surrounded by brackets ("<" and ">"). The first text string includes the characters "TOOLTIP TXT =", followed by characters that are displayed on a Web Page as a tooltip, followed by the string "EVERYWHERE BELOW". Next are second and third text strings **234**, **236** similar to those of the first format **210**. A tooltip tag having an EVERYWHERE BELOW attribute applies to all occurrences of the displayed info on the Web page located below the tooltip tag on the page. Thus, the page author can "turn on" a tooltip for all locations below the tooltip tag and the tooltip can be used to explain multiple occurrences of a specific code below a certain point on the page.

Fourth format **240** includes a <TOOLTIP ALLOFF> tag that turns off all "EVERYWHERE" tooltips in the rest of the file. If no ALLOFF tag appears, the EVERYWHERE tag remains in force for the rest of the page.

FIG. **3** shows an example of a Web page displayed on display device **160** of FIG. **1**. The page includes lines **302** and **304**. Line **302** reads as follows:

UA Feb. 15, 1996 0931 LHR SFO 5368 6710 12078

Although it is clear from the column heading that "LHR" represents a "From City," it is not necessarily clear what "LHR" stands for.

FIG. **4** shows an example of a Web Page with a tooltip displayed thereon in accordance with a preferred embodiment of the present invention. In the example of FIG. **4**, the user has placed the cursor over the text "LHR" on line **302** and has let the cursor remain stationary for a predetermined period of time, such as three seconds. After the cursor has remained in place over the displayed information "LHR" for the predetermined period of time, the tooltip text "London Heathrow" is displayed, indicating that "LHR" is an abbreviation for "London Heathrow." In a preferred embodiment, any piece of information displayed on display device **160** can have an associated tooltip.

For example, the HTML to display line **302** looks like this:

<TOOLTIP TXT="Universal Airlines"
EVERYWHERE> UA </TOOLTIP>
Feb. 15, 1996 0931 <TOOLTIP
TXT="London Heathrow"
EVERYWHERE> LHR </TOOLTIP>
<TOOLTIP TXT="San Francisco"
EVERYWHERE> SFO </TOOLTIP>
5368 6710 12078

FIGS. **5**(*a*) through **5**(*c*) show respective examples of HTML tooltip tags that could have been used to specify the tooltip of FIG. **4**. The tooltip tags of FIG. **5** could be used in the HTML to display the tooltip for "LHR" of line **302**. The tooltip tag **501** of FIG. **5**(*a*) causes the tooltip text "London Heathrow" to be associated only with the occurrence of "LHR" in line **302** (assuming that the tooltip tag is part of the HTML specifying line **302**). The tooltip tag **502** of FIG. **5**(*b*) causes the tooltip text "London Heathrow" to be associated with the occurrences of "LHR" in both lines **302** and **304** (see FIG. **8**). The tooltip tag **503** of FIG. **5**(*c*) causes the tooltip text "London Heathrow" to be associated with the occurrence of "LHR" in both lines **302** and **304** (see FIG. **8**) (assuming that the tooltip tag is part of the HTML for line **302**). If the tooltip tag **503** of FIG. **5**(*c*) occurs below the HTML for line **302**, then the tooltip text is associated only with the occurrence of "LHR" in line **304**).

FIGS. **6**(*a*) and **6**(*b*) are flow charts showing steps performed by browser software **130** preferably prior to displaying the Web page of FIG. **3**. It will be understood by persons of ordinary skill in the art that the steps of flow charts in this document are performed by CPU **102** executing the instructions of browser **130** in accordance with HTML **135**. Initially, in step **602**, the browser requests HTML **145** for a page from server **140**. In step **604**, the server sends the requested HTML, which is stored as HTML **135** in memory **104**. In step **606**, the browser determines whether HTML **135** contains any non-empty tooltip tags. If so, certain initialization steps need to be performed.

Step **608** represents the top of a loop performed for each non-empty tooltip tag in HTML **135**. An empty tooltip tag is a tooltip tag missing either the tooltip text or the displayed info. In step **610**, the browser determines where the displayed info is displayed on display device **160** and stores in memory the region of the display device on which the displayed info is displayed. The browser also stores the tooltip text in association with the region information.

In step **612**, if the tooltip tag has an EVERYWHERE attribute, then it may be necessary to store information concerning other occurrences of the displayed info on the page. Otherwise, control passes to step **628**. If an EVERYWHERE attribute is present, in step **614**, the browser determines whether there is a BELOW attribute present. If not, a startpoint is set to be the top of the page. If a BELOW attribute is present, the startpoint is set to where the displayed text is located on the page.

In step **619**, if an ALLOFF tag is present, an endpoint is set to the location on the page of the ALLOFF tag in step **620**. If no ALLOFF tag is present, the endpoint is set to the end of the page in step **621**.

Step **622** represents the beginning of a loop performed from the startpoint of the page to the endpoint of the page. In step **623**, if another occurrence of the displayed text is located, then the browser stores in memory the region of the display device on which the displayed info is displayed in step **624**. The browser also stores the tooltip text in association with the region information. Steps **626** and **628** represent the end of their respective loops.

The test to determine whether another occurrence of the displayed info is as follows:

The core string is the string of characters between the initial <TOOLTIP> tag with any HTML tags removed. Also any whitespace characters in the beginning or the end of the string are removed.

Full word matching is defined as follows:

The first character of a string being matched must meet at least one of the following conditions:

1) It must be the first character on a line or the first character in the file.

2) The character immediately before the character must be the end of an HTML tag (typically a ">").

3) The character immediately before the character must be a whitespace character or a punctuation character.

The last character of a string being matched must meet at least one of the following conditions:

1) It must be the last character on a line or the last character in the file.

2) The character immediately after the character must be the beginning of an HTML tag (typically a "<".

3) The character immediately after the character must be a whitespace character or a punctuation character.

"Whitespace" characters are defined depending on the language and character set supported by the browser but typically include SPACE, NULL, and TAB.

"Punctuation" characters are defined depending on the language and character set supported by the browser but typically include,.:;/\|?!"'[]{}( )+−*+&%$#.

FIG. **8** shows an example of the contents of the data structure in memory **104** resulting from the steps of FIG. **6**. In the data structure, a first entry **802** stores the region on display device **160** where "LHR" is displayed in line **302**. Associated therewith is the tooltip text "London Heathrow". A second entry stores the region on display device **160** where "LHR" is displayed in line **304**. Associated therewith is the tooltip text "London Heathrow". Thus, whenever the user places the cursor in the region of field **802** or field **804** and leaves the cursor in the region for a predetermined length of time, the tooltip text "London Heathrow" preferably will be displayed in proximity to the displayed info. It will be understood that there may be other entries in the data structure representing other regions and tooltip texts not shown in the example.

FIG. **7** is a flow chart showing steps performed by browser **130** to display the Web page of FIG. **4** in accordance with the data structure of FIG. **8**. In step **702**, the page of FIG. **3** is shown on display device **160** in accordance with HTML **135**, in a manner known to persons of ordinary skill in the art. The steps of FIG. **6** are also performed at this time. It will be understood that there are other steps (not shown) that are performed by browser **130** to display a web page and to accept input from the user. Many of these steps are not described herein to enhance the clarity of the example.

In step **704**, if there are tooltip tags present in HTML **135**, the remaining steps of FIG. **7** are performed. Initially, in step **706** the current time is saved as "spot_time" and current coordinates of the cursor are saved as X**1** and Y**1**. Step **708** represents the beginning of a loop. In step **709**, the current cursor location is saved as X**2** and Y**2**.

In the described embodiment, tooltip text is not displayed while the page is being scrolled. Although the cursor may pass briefly over displayed text during scrolling, it is not desirable to display tooltip text for the brief time that the cursor is so located. Thus, in step **710**, if the display is currently scrolling, spot_time is set to current time and control passes to step **724**. In step **712**, if the display has just finished scrolling, control passes to step **714**, where the region fields of entries **802**, **804**, etc in memory are recalculated to reflect the new screen location of the displayed info. Otherwise, control passes to step **716**.

In step **716**, if the current cursor position (X**2**, Y**2**) is within a tooltip region, as defined by the region field of FIG. **8**, then control passes to step **718**. Otherwise spot_time is set to current time and control passes to step **724**. In step **718**, if the cursor is moving, spot_time is set to current time,

any current display of tooltip text is ended (step **720**) and control passes to step **724**. Otherwise, if the cursor is not moving, control passes to step **721**. In step **721**, if a predetermined time has passed since the cursor stopped moving (determined by current_time_spot_time), then control passes to step **722**. Otherwise, control passes to step **724**.

In step **722**, the cursor has been resting on a tooltip region for a predetermined period of time. The tooltip text associated with the current cursor location (**X2**, **Y2**) preferably is displayed in proximity to the displayed info on display device **160**. For example, in FIG. **4**, the tooltip text "London Heathrow" preferably is displayed in proximity to the displayed info "LHR". As discussed above, the tooltip text is displayed until the cursor is moved or until the user moves to a different web page.

Displaying the tooltip is done by looking up the point denoted by (**X2**, **Y2**) in the tooltip data structure for the current page and finding the tooltip text for the screen region that (**X2**, **Y2**) falls within. The text preferably is displayed in a yellow rectangle that is positioned one line above the top of this screen region and centered around **X2**. If placing the rectangle about the region would make it extend beyond the top of the browser window than the rectangle is lowered by as many pixels as it would have extended beyond the top of the browser window. If centering the rectangle around **X2** would cause it to extend to the left or the right of the browser window, then the rectangle is moved right or left, respectively, by as many pixels as it would have extended. If the text in the tooltip is so long that the rectangle would be wider than the width of the browser window then the text is word-wrapped to fit within a rectangle the width of the browser window.

Although not shown in FIG. **4**, if the tooltip tag of FIGS. **5**(*b*) and **5**(*c*), which include the EVERYWHERE attribute, was included in HTML **135**, placing the cursor on "LHR" of line **304** would also cause the browser to display the tooltip text "London Heathrow" near the displayed info "LHR" of line **304**. It is also possible to place tooltip tags within other tooltip tags.

In summary, the present invention allows the designer of a web page to include tooltips within the web page. The EVERYWHERE attribute and the BELOW attribute allow the designer of a Web page use only one tooltip tag to specify tooltip text associated with a plurality of occurrences of a displayed text string, using only one tooltip tag. Thus, a plurality of occurrences of displayed information can have the same tooltip text associated therewith as the result of a single tooltip tag inserted within the HTML describing the page. The ALLOFF attribute allows the designer to "turn off" tooltips in the middle of a page.

Other embodiments will be apparent to those skilled in the art from consideration of the specification and practice of the invention disclosed herein. It is intended that the specification and examples be considered as exemplary only, with a true scope of the invention being indicated by the following claims and equivalents.

What is claimed is:

1. A method of specifying tooltips for text on a web page, comprising the steps of:

determining a location on the web page for the information for which the tooltip is to be displayed;

storing in a memory of a data processing system a tooltip tag having the format:

<TOOLTIP TXT=tooltip information>text</TOOLTIP>

where the tooltip tag is stored in the memory in a location associated with the location of the text on the web page and includes an EVERYWHERE attribute, indicating that the tooltip should be displayed for every occurrence of the displayed info on the web page.

2. A method of specifying tooltips for text on a web page, comprising the steps of:

determining a location on the web page for the information for which the tooltip is to be displayed;

storing in a memory of a data processing system a tooltip tag having the format:

<TOOLTIP TXT=tooltip information>text</TOOLTIP>

where the tooltip tag is stored in the memory in a location associated with the location of the text on the web page and includes an EVERYWHERE BELOW attribute, indicating that the tooltip should be displayed for every occurrence of the displayed info below the tooltip tag in the HTML when the web page is displayed.

3. A method of specifying tooltips for text on a web page, comprising the steps of:

determining a location on the web page for the information for which the tooltip is to be displayed;

storing in a memory of a data processing system a tooltip tag having the format:

<TOOLTIP TXT=tooltip information>text</TOOLTIP>

where the tooltip tag is stored in the memory in a location associated with the location of the text on the web page and includes an ALLOFF attribute, indicating that the tooltip should not be displayed for any occurrence of the displayed info below the displayed info corresponding to the tooltip tag when the web page is displayed.

4. A method of processing HTML that describes a web page, comprising the steps performed by a data processing system, of:

receiving HTML describing the web page to be displayed;

reviewing the HTML to locate a TOOLTIP TXT tag in the HTML, the TOOLTIP TXT tag identifying text, containing associated tooltip information which is to be displayed as a tooltip for the text when the web page is displayed, and including an EVERYWHERE attribute, indicating that the tooltip should be displayed for every occurrence of the displayed info on the web page;

storing in a memory of the data processing system the region of a display device at which the text will be displayed;

storing in the memory the tooltip information; and

displaying the Web page in accordance with the HTML describing the web page.

5. A method of processing HTML that describes a web page, comprising the steps performed by a data processing system, of:

receiving HTML describing the web page to be displayed;

reviewing the HTML to locate a TOOLTIP TXT tag in the HTML, the TOOLTIP TXT tag identifying text, containing associated tooltip information which is to be displayed as a tooltip for the text when the web page is displayed, and including an EVERYWHERE BELOW attribute, indicating that the tooltip should be displayed for every occurrence of the displayed info below the tooltip tag in the HTML when the web page is displayed;

storing in a memory of the data processing system the region of a display device at which the text will be displayed;

storing in the memory the tooltip information; and

displaying the Web page in accordance with the HTML describing the web page.

6. A method of processing HTML that describes a web page, comprising the steps performed by a data processing system, of:

receiving HTML describing the web page to be displayed;

reviewing the HTML to locate a TOOLTIP TXT tag in the HTML, the TOOLTIP TXT tag identifying text, containing associated tooltip information which is to be displayed as a tooltip for the text when the web page is displayed, and including an ALLOFF attribute, indicating that the tooltip should not be displayed for any occurrence of the displayed info below the displayed info corresponding to the tooltip tag when the web page is displayed;

storing in a memory of the data processing system the region of a display device at which the text will be displayed;

storing in the memory the tooltip information; and

displaying the Web page in accordance with the HTML describing the web page.

* * * * *