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Patent Claims Revisited

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Patent Claims Revisited

Dargaye Churnet



Patent Claims Revisited

By Dargaye Churnet*

This paper proposes that the most beneficial patent reform begins with claim drafting regulations. Part I serves as an introduction. Part II highlights the problems with the nation’s current patent system. This section discusses how each of these problems is caused in part by the current claim drafting regulations. Part III reviews the changes made by the America Invents Act. Part IV proposes new regulations for claim drafting that will offer more significant benefits than those provided by the America Invents Act. Specifically, this paper argues that by requiring applicants to include a claim chart defining each claim limitation, examiners at the PTO will need less time to understand the patent’s scope, the PTO will issue higher quality patents, and patent litigation costs will be diminished because courts will devote less time to claim construction.

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I. INTRODUCTION

¶1

On September 16, 2011, President Obama signed into law the most influential patent reform legislation in nearly sixty years. The Leahy-Smith America Invents Act (“Act”) is Congress’s attempt to overhaul a beleaguered patent system, which many believe was long overdue for reform. The Act does just that. It drastically changes the

* The author wrote this article in 2012 as a student at Northwestern University School of Law. Prior to attending Northwestern, the author served as a patent examiner at the United States Patent and Trademark Office for three years. The author has experience drafting and litigating patents. The author wishes to thank James Ferguson, an adjunct professor at Northwestern, for guidance in preparing this article.

filing system for U.S. patents along with the procedures for challenging applications filed to the United States Patent and Trademark Office (PTO). The Act further permits the PTO to set its own fees and maintain these funds in a separate account, thereby allowing the PTO to hire more examiners to attack the tremendous patent application backlog.

¶2 The Act was designed to fix a broken patent system. The U.S. patent system's problems include patent pendency (the time it takes the PTO to respond from the date on which the applicant files the application), the PTO's application backlog, the patent examination quality at the PTO, patent litigation costs, and abuse of the patent system by patent trolls, to name a few.

¶3 Although the Act addresses many of these issues peripherally, it fails to address the cause of most problems in the patent system. The problems faced in litigation are the result of a system that allows an inventor to amorously define the metes and bounds of her invention. Far too often, patents—and, more specifically, the patent's claims—offer little guidance to third parties as to what exactly has been invented. Such confusion leaves even well-meaning manufacturers unaware that their devices or processes infringe upon another's intellectual property rights. This, in turn, leads the patentee to bring the infringer to court in an attempt to recover damages.

¶4 Before a court can address the issue of damages, it must first analyze the limitations of the asserted claims through claim construction. Through this process, the court reviews the patent's claims along with the prosecution history in an attempt to accurately ascertain the metes and bounds of the invention. Once the claim terms are defined, the court can then determine whether the defendant has infringed. Thus, claim construction is a pivotal element of patent litigation.

¶5 The claims are, similarly, the central focus of the patent examiner's review at the PTO. When the applicant has conceived of an invention and drafted a patent application, she submits it to the PTO for examination. An examiner must review the entire application under significant time constraints, and then search for relevant prior art references and draft an Office Action explaining why he has rejected or allowed the patent. The examiner's determination of whether the patent will be issued is based almost exclusively on the claims. The examiner must interpret the claims in light of the entire specification.

¶6 Reading an entire patent application and gaining a thorough understanding of the claims may take weeks. Patent examiners, however, are expected to do so in less than 24 hours. It is no wonder, then, that many have questioned the quality of patents the PTO has issued. It is unreasonable to expect a patent examiner to adequately review patent claims vaguely linked to a lengthy and technical specification in such a short amount of time. These "bad patents" the PTO grants then become the issue of litigation and claim construction.

¶7 This paper proposes that the most beneficial patent reform begins with claim drafting regulations. Part II highlights the problems with the nation's current patent system. This section discusses how each of these problems is caused in part by the current claim drafting regulations. Part III reviews the changes made by the America Invents Act. Part IV proposes new regulations for claim drafting that will offer more significant benefits than those provided by the America Invents Act. Specifically, this paper argues that by requiring patent applications to include a claim chart defining each claim limitation, the examiner at the PTO will need less time to understand the patent's

scope, the PTO will issue higher quality patents, and patent litigation costs will be diminished because courts will devote less time to claim construction.

II. PATENT PROCESS

A. Claim Drafting

¶8 To understand the value of claim drafting reform, one must first understand the critical role that claims play throughout the patent process. The process begins when an inventor conceives of a novel method, machine, manufacture, or composition of matter.¹ The inventor will likely seek to protect her intellectual property rights to the invention. She does so by applying for a patent, which rewards her full disclosure of the innovation with a temporary monopoly on the rights to the invention.²

¶9 The inventor—or more often, her patent attorney—must then draft a patent application to submit to the PTO. The application includes, in relevant parts: an abstract, drawings, a brief description of the drawings and invention, a specification describing the invention in detail, and, most importantly, the claims.³

¶10 Each section of the patent application plays a different role in providing as full a description of the invention as possible. The application begins with an abstract that provides the reader with a single- paragraph description of the invention, the details of which will be expounded upon throughout the application.⁴ Next, the application must include drawings that are “necessary to understand the subject matter to be patented.”⁵ These drawings “show every feature of the invention as specified in the claims.”⁶ Depending on the invention, the drawings often display the invention from multiple views, with identifying symbols and references to allow the reader to associate the drawings with the claims and detailed specification.⁷

¶11 Immediately following the drawings is a section briefly describing each drawing in one or two sentences, providing the reader with a greater understanding of the aspects of the invention being displayed in the drawings.⁸ Next, the inventor provides a brief summary of the invention. This section “should present the substance or general idea of the claimed invention in summarized form.”⁹ The brief summary may identify the invention’s benefits and how they overcome preexisting problems in the field of art.¹⁰

¶12 Each of the previous sections provides support for the claimed invention, but it is the next section—the detailed description of the invention—that provides the most support for the claims. In this section, “the invention must be explained along with the

¹ See 35 U.S.C. § 101 (2006).

² See, e.g., *Festo Corp. v. Shoketsu Kinzoku Kogyo Kabushiki Co.*, 535 U.S. 722, 730 (2002) (“The patent laws ‘promote the Progress of Science and useful Arts’ by rewarding innovation with a temporary monopoly.”) (quoting U.S. CONST. art. I, § 8, cl. 8)).

³ See *Nonprovisional (Utility) Patent Application Filing Guide*, USPTO (January 2012), <http://www.uspto.gov/patents/resources/types/utility.jsp>.

⁴ *Id.*

⁵ *Id.*

⁶ *Id.*

⁷ See 37 C.F.R. § 1.84 (2011).

⁸ See *Nonprovisional (Utility) Patent Application Filing Guide*, *supra* note 3.

⁹ *Id.*

¹⁰ *Id.*

process of making and using the invention in full, clear, concise, and exact terms.”¹¹ Most notably, this section must (1) enable a person of ordinary skill in the art to practice the invention, (2) provide a written description of what is being claimed, and (3) describe the best mode for practicing the invention.¹² As the U.S. Court of Appeals for the Federal Circuit pointed out, the “specification aids in ascertaining the scope and meaning of the claims inasmuch as the words of the claims must be based upon the description. The specification is, thus, the primary basis for construing the claims.”¹³

¶13 The patent application concludes with a list of the claims. The patent claims’ central function is to define the scope of legal protection that the government grants the inventor in return for her disclosure of the invention.¹⁴ Therefore, the patent attorney must reduce the inventor’s conception that has been described in a specification, sometimes hundreds of pages long,¹⁵ to a numbered list of one-sentence claims that provide adequate legal protection for the invention.¹⁶ In so doing, the attorney walks a tightrope as he attempts to draft claims that are simultaneously broad and narrow.

¶14 On the one hand, the attorney must ensure that the claims are broad enough to protect the inventor’s intellectual property rights to the invention.¹⁷ The broader an attorney drafts the claims, the more coverage the inventor has when suing third parties for infringing the patent. Therefore, broader claims provide the inventor with a more valuable patent.

¶15 On the other hand, excessively broad claims run a greater risk of being rejected by the PTO. The lack of specificity in broad claims provides patent examiners with more room for claim interpretation and a more expansive wealth of prior art that anticipate the claims. Thus, while broad claims are preferable to draft the most valuable patent to the inventor, attorneys must balance this interest with the need for drafting claims narrow enough to avoid an examiner’s rejection at the PTO.¹⁸

¶16 Regardless of how broad the claims may be, their scope cannot extend beyond what is disclosed in the rest of the specification.¹⁹ To satisfy this requirement, the claims simply “must find clear support or antecedent basis in the description so that the meaning of the terms in the claims may be ascertainable by reference to the description.”²⁰ Furthermore, in drafting the claims, the patentee may be her own “lexicographer,”

¹¹ *Id.*

¹² See 35 U.S.C. § 112 (2006) (“The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same, and shall set forth the best mode contemplated by the inventor of carrying out his invention.”).

¹³ *Standard Oil Co. v. Am. Cyanamid Co.*, 774 F.2d 448, 452 (Fed. Cir. 1985).

¹⁴ See *Motion Picture Patents Co. v. Universal Film Mfg. Co.*, 243 U.S. 502, 510 (1917) (describing the interpretive rules used by the Court in interpreting patent law).

¹⁵ See Sean A. Pager, *Patents on a Shoestring: Making Patent Protection Work for Developing Countries*, 23 GA. ST. U. L. REV. 755, 778 (2007) (describing the technical complexity often associated with patents).

¹⁶ See MPEP § 608.01(m) (8th ed. Rev. 10, July 2010).

¹⁷ See Steven W. Lundberg et al., *Crafting the Claims*, in *ELECTRONIC AND SOFTWARE PATENTS: LAW AND PRACTICE*, § 6.02.C (Steven W. Lundberg et al. eds., 2d ed. 2005).

¹⁸ See *id.*

¹⁹ See MPEP § 608.01(i).

²⁰ *Id.*

defining terms outside of their plain and ordinary meaning.²¹ In so doing, the patentee may refer to elements disclosed in the specification using different terms in the claims.

¶17 Given these considerations, it is essential that one read the entire specification to gain an accurate understanding of the claimed invention. A third party must often read a specification multiple times to gain a thorough understanding of the claims.²² The lax claim drafting regulations—specifically, for tying the claimed terms to their exact location in the specification—cause many of the current problems with the nation’s patent system. Regulations linking the claimed terms with their precise definition will resolve many of the problems presented in patent examination and litigation.

B. Patent Examination

¶18 Once the inventor and her attorney have completed drafting the patent application, they submit it to the PTO for review. A patent examiner knowledgeable in the invention’s field of art reviews the application. The examiner must read the entire application and review the drawings.²³ Once the examiner has reviewed the entire specification to gain an understanding of the invention, he reads the claims, giving them “their broadest interpretation consistent with the specification.”²⁴

¶19 Next, the examiner conducts a search of the prior art in an attempt to find references that anticipate or obviate the claims.²⁵ This search includes patents, publications, and any other evidence showing that the invention was in the public domain before the application was filed or conceived. More likely than not, the examiner will find references that he believes can be used to reject the claims.²⁶ Once the search is complete, the examiner will draft an Office Action to the applicant explaining why the claims were rejected or why the patent was granted.²⁷

¶20 The applicant has an opportunity to amend the claims to overcome the prior art rejections or can argue that the rejections are improper.²⁸ The examiner will receive the Office Action response from the applicant and perform a new prior art search.²⁹ The examiner will then send a second Office Action to the applicant similar to the first. This

²¹ See *In re Bass*, 314 F.3d 575, 577 (Fed. Cir. 2002) (“Words in a claim are to be given their ordinary and accustomed meaning unless the inventor chose to be his own lexicographer in the specification.”); *Teleflex, Inc. v. Ficoso N. Am. Corp.*, 299 F.3d 1313, 1325 (Fed. Cir. 2002) (“The patentee may demonstrate an intent to deviate from the ordinary and accustomed meaning of a claim term by including in the specification expressions of manifest exclusion or restriction, representing a clear disavowal of claim scope.”).

²² See *Pager*, *supra* note 15, at 778.

²³ See *Rowe v. Dror*, 112 F.3d 473, 480 (Fed. Cir. 1997) (Examiners have the “task of examining the entire patent disclosure to discern the meaning of claim words and phrases.”).

²⁴ *In re Buszard*, 504 F.3d 1364, 1366 (Fed. Cir. 2007); see also *In re Yamamoto*, 740 F.2d 1569, 1571 (Fed. Cir. 1984) (employing the specification analysis).

²⁵ See 35 U.S.C. §§ 102, 103 (2006).

²⁶ See *Network Appliance, Inc. v. Sun Microsystems, Inc.*, No. C-07-06053, 2008 U.S. Dist. LEXIS 107840, at *5–6 (N.D. Cal. Nov. 3, 2008) (“[T]he PTO almost always grants initial rejections . . . against all claims.”).

²⁷ See MPEP § 706 (8th ed. Rev. 10, July 2010) (“The goal of examination is to clearly articulate any rejection early in the prosecution process so that the applicant has the opportunity to provide evidence of patentability and otherwise reply completely at the earliest opportunity.”).

²⁸ *Id.* § 708.

²⁹ *Id.*

process generally continues until the PTO grants the patent or the applicant abandons the application.

¶21 Two major problems have arisen from the PTO's current process for examining applications. First, the PTO faces a backlog of about one million patent applications.³⁰ This backlog has lengthened pendency to an average of over two years.³¹ The backlog and pendency problem result in courts congested with low quality patent disputes. Second, examiners do not have enough time to gain a complete understanding of the claimed inventions. This leads to (a) examiners rejecting applications using references that do not read on the claims and (b) examiners allowing patents when a more thorough understanding of the claims would have led them to find a reference that rejects the claims.

¶22 The PTO's internal flaws are, in part, the cause of these problems. The average age of newly-hired examiners is around twenty-seven to twenty-eight years old.³² These young examiners are generally on their first or second job and use the PTO as a docking point in their careers.³³ So, many of these new examiners only stay at the PTO for one to three years.³⁴ New hires generally spend their first eight months in a patent examining training program and do not examine their first application until their sixth month at the PTO.³⁵ Many of these examiners leave the PTO and are replaced by an influx of new examiners, who, in turn, leave the PTO after one to three years. Therefore, examiners with very little work experience, let alone patent examining experience, review many patent applications. Furthermore, a new examiner is often put in charge of an application reviewed by an examiner that left the PTO. The new examiner is forced to spend valuable examination time getting familiar with the application and prosecution history.

¶23 Although a supervisor reviews the junior examiner's Office Action and search history, the supervisor is under time constraints and cannot review all of the prior art noted by the junior examiner. Thus, many applications are left to an extremely inexperienced examiner's discretion to determine whether they are worthy of a patent.

¶24 Though not all examiners at the PTO are inexperienced, they all face the examination time constraint. On average, an examiner is expected to review an application within sixteen to seventeen hours.³⁶ This includes reading the application, searching the prior art, and drafting an Office Action. Because many of the examiners lack technical expertise in their field, much of their examination time is spent sifting through the applicant's documents and reading secondary sources to understand the art presented in the application. Furthermore, examiners often spread the sixteen to seventeen examination hours over three to four years in back and forth correspondence

³⁰ See BETH SIMONE NOVECK, *WIKI GOVERNMENT: HOW TECHNOLOGY CAN MAKE GOVERNMENT BETTER, DEMOCRACY STRONGER, AND CITIZENS MORE POWERFUL* 59 (2009); Barry Ashby, *U.S. IP System Needs Improvement*, INDUS. HEATING, July 1, 2007, at 14 (PTO backlog has increased over 500% in the last 10 years).

³¹ Steve Seidenberg, *Novel Ideas: PTO Proposes a New Suite of Patent Products to Streamline Applications*, INSIDE COUNS., Jan. 2007, at 22.

³² Sharon Barner, *Strategies for the USPTO: Ensuring America's Innovation Future*, 8 Nw. J. TECH. INTELL. PROP. 440, 444 (2010).

³³ *Id.*

³⁴ *Id.*

³⁵ *Id.* at 445.

³⁶ John R. Thomas, *Collusion and Collective Action in the Patent System: A Proposal for Patent Bounties*, 2001 U. ILL. L. REV. 305, 314 (2001).

with the applicant.³⁷ Simply put, examiners are not given enough time to thoroughly review most patent specifications to gain an accurate understanding of the claims.

¶25 The PTO's problems come down to speed and quality. Critics of the current patent system desire a shorter pendency, which would diminish the application backlog, and to have the PTO issue higher quality patents. Given the PTO's internal flaws, coupled with the rapid increase of patent applications filed to the PTO, claim drafting reform would greatly benefit patent examiners and, in turn, the entire patent process. If examiners could more quickly determine the limitations of each claim, they would both spend less time reviewing excessive specifications and have more time to search for the most relevant prior art. In so doing, examiners would be able to reject patents that are anticipated or obviated by the prior art, thereby reducing the number of bad patents granted. However, under the current system, many bad patents are granted. This leads to unwanted effects in patent litigation—namely, rising litigation costs through time spent in claim construction and the emergence of patent trolls abusing the patent system.

C. Patent Litigation

1. Claim Construction

¶26 Claim construction is the court's process of interpreting patent claims to determine their proper scope and meaning. As described above, the PTO must construe an applicant's patent claims to determine patentability in view of novelty, obviousness, enablement and written description.³⁸ Similarly, manufacturers and innovators may review and interpret the patent claims in order to determine how best to design around or improve upon the claimed invention.³⁹ Claim interpretation further affects patent licensing negotiations, as the value of patent licenses depends on patent claim scope.⁴⁰

¶27 During patent litigation, claim construction serves the dual purpose of determining whether the defendant has infringed the patent and determining whether the patent is valid.⁴¹ Before a court can determine whether the patent has been infringed, it must first determine the patent claim scope by construing the claims.⁴² A validity analysis requires the court to compare the construed claims to the prior art as well as to the patent disclosure itself. Claim construction, therefore, is a critical factor in patent litigation and is often the first step in resolving patent disputes.⁴³

¶28 In order to determine whether an accused action infringes the patent or if prior art invalidates the patent, the court must know what the claims in the patent mean. Courts generally give claim terms their plain and ordinary meaning.⁴⁴ This interpretation is

³⁷ See Kristen Osenga, *Entrance Ramps, Tolls, and Express Lanes—Proposals for Decreasing Traffic Congestion in the Patent Office*, 33 FLA. ST. U. L. REV. 119, 130–31 (2005).

³⁸ See Joseph Scott Miller, *Enhancing Patent Disclosure for Faithful Claim Construction*, 9 LEWIS & CLARK L. REV. 177, 192 (2005).

³⁹ See Christopher A. Cotropia, *Patent Claim Interpretation and Information Costs*, 9 LEWIS & CLARK L. REV. 57, 63 (2005).

⁴⁰ See Miller, *supra* note 38, at 199.

⁴¹ See Kimberly A. Moore, *Are District Court Judges Equipped to Resolve Patent Cases?*, 15 HARV. J.L. & TECH. 1, 2 (2001) (“[C]laim construction is the touchstone for any infringement or validity analysis.”).

⁴² See *Markman v. Westview Instruments, Inc.*, 52 F.3d 967, 976 (Fed. Cir. 1995) (en banc).

⁴³ See Cotropia, *supra* note 39, at 74–75.

⁴⁴ Mark A. Lemley, *The Changing Meaning of Patent Claim Terms*, 104 MICH. L. REV. 101, 102–03

supplemented by the patent's specification and the prosecution history;⁴⁵ it may also include the context of other claims in the same patent application.⁴⁶

¶29 Courts do not always apply the plain and ordinary meaning to claim terms. If the disclosure provides specific definitions, the court will apply those definitions to the claim terms.⁴⁷ However, patentees are limited in their ability to be their own lexicographer. For instance, they cannot disclaim definitions or prior art from the claims.⁴⁸ Further, the court must always construe the claims in light of the prosecution history and prior art. Accordingly, courts will not construe claims to mean something that the PTO rejected or the patentee eliminated through amendments during patent prosecution.⁴⁹

¶30 If ambiguity persists after applying these techniques, the Federal Circuit has indicated that courts can rely on extrinsic evidence, such as technical dictionaries or expert testimony.⁵⁰ If a claim is still unclear after a court applies all of the above claim construction rules, it should construe the claim so as to be valid if possible.⁵¹ Doing so usually results in the court applying a narrow claim construction.

¶31 Patent litigation is notoriously costly; some studies estimate that the median cost is as much as \$4 million for a case in which the stakes are between \$1 million and \$25 million.⁵² A portion of this cost is attributable to time spent on claim construction.⁵³ To prepare for the *Markman* hearing at which the court considers evidence and arguments that it uses to construe the claims, the patentee will spend time carefully reviewing all prior art in order to propose a construction that avoids the prior art and encompasses the accused product.

¶32 The defendant will also review the prosecution history to determine what interpretations the patentee has disclaimed. In addition, the defendant will review the prior art in order to propose a construction that encompasses the prior art and avoids the accused product.⁵⁴ The *Markman* hearing and resulting claim construction ruling by the court is the most important part of most cases.⁵⁵

¶33 After the court issues a claim construction ruling, the parties must proceed based on that ruling. Since claim construction is a legal question,⁵⁶ the Federal Circuit reviews a district court's claim construction de novo with no deference given to the lower court's factual findings.⁵⁷ If, as happens in a substantial percentage of all reported appeals, the Federal Circuit reverses the district court based on the claim construction ruling,⁵⁸ the

(2005).

⁴⁵ Phillips v. AWH Corp., 415 F.3d 1303, 1321 (Fed. Cir. 2005) (en banc).

⁴⁶ See *id.* at 1325.

⁴⁷ See *id.* at 1315–16, 1319.

⁴⁸ See *id.* at 1316.

⁴⁹ See Microsoft Corp. v. Multi-Tech Sys., Inc., 357 F.3d 1340, 1350 (Fed. Cir. 2004).

⁵⁰ See Phillips, 415 F.3d at 1317–18.

⁵¹ See *id.* at 1327.

⁵² See Miller, *supra* note 38, at 198.

⁵³ See Lee Petherbridge, *Positive Examination*, 46 IDEA 173, 186–87 (2006).

⁵⁴ See generally Gretchen Ann Bender, *Uncertainty and Unpredictability in Patent Litigation: The Time Is Ripe for a Consistent Claim Construction Methodology*, 8 J. INTELL. PROP. L. 175, 210–11 (2001).

⁵⁵ See Lemley, *supra* note 44, at 101–02.

⁵⁶ See *Markman v. Westview Instruments, Inc.*, 517 U.S. 370, 388–89 (1996).

⁵⁷ See *Cybor Corp. v. FAS Techs., Inc.*, 138 F.3d 1448, 1454 (Fed. Cir. 1998) (en banc).

⁵⁸ See Kimberly A. Moore, *Markman Eight Years Later: Is Claim Construction More Predictable?*, 9 LEWIS & CLARK L. REV. 231, 239 (2005).

parties must repeat all of their trial preparation and, perhaps, even the trial. This is, at least in part, attributable to differing claim construction⁵⁹ standards and can substantially increase litigation costs.

2. Patent Trolls

¶34 The ambiguity of patent claims has contributed to the emergence of patent trolls. This group, often referred to as “non-practicing entities,” acquires patents with no intention of practicing the invention.⁶⁰ Instead, the troll simply waits for a manufacturer to sufficiently commercialize a product that could arguably read on the troll’s patent and then seeks to extract exorbitant licensing fees.⁶¹ Patent trolls thrive in conditions where they can easily acquire bad patents, patent litigation costs are extremely high, and the risk to a defendant of losing a patent suit is potentially crippling.⁶² As a result, U.S. companies face a plethora of patent suits brought by plaintiffs with arguably substandard patents.⁶³ In fact, a Boston University study has revealed that patent trolls have cost U.S. innovators \$500 billion in lost wealth from 1990 to 2010.⁶⁴

¶35 The mere threat of litigation can be a powerful tool for the patent troll to force licensing or settlement agreements from profitable manufacturers that cannot afford to stop production of the potentially infringing device or process.⁶⁵ Consequently, the settlement or licensing fee is often extremely high, even when the asserted patent most likely would not read on the innovator’s device or process.⁶⁶ Trolls can then use the fees obtained through licensing agreements to create a steady cash inflow to fund future legal threats. In this way, patent trolls create a disincentive to innovate and stifle research and development.⁶⁷

¶36 Claim drafting reform would diminish the harmful effect of patent trolls on the patent system in at least two ways. First, clearly defined claims allow third parties to more accurately determine the patent scope. Presently, manufacturers sued by patent trolls have the option of settling a potentially meritless claim or continuing through the costly and uncertain nature of patent litigation and claim construction. Parties opt for settlement when they are both uncertain of the asserted claim scope and of how the court

⁵⁹ See, e.g., Kimberly A. Moore, *Judges, Juries, and Patent Cases—An Empirical Peek Inside the Black Box*, 99 MICH. L. REV. 365, 377–78 (2000).

⁶⁰ Gene Quinn, *In Search of a Definition for the Term “Patent Troll”*, IPWATCHDOG (July 18, 2010, 11:46 PM), <http://ipwatchdog.com/2010/07/18/definition-patent-troll/id=11700/>.

⁶¹ See Damien Myers, *Reeling in the Patent Troll: Was eBay v. MercExchange Enough?*, 14 J. INTELL. PROP. L. 333 (2007).

⁶² Gerard N. Magliocca, *Blackberries and Barnyards: Patent Trolls and the Perils of Innovation*, 82 NOTRE DAME L. REV. 1809, 1812 (2007).

⁶³ See, e.g., Joe Brennan et al., *Patent Trolls in the U.S., Japan, Taiwan and Europe*, 13 CASRIP Newsletter (Center for Advanced Study & Research on Intellectual Property, Seattle, Wash.), Spring/Summer 2006, <http://www.law.washington.edu/Casrip/Newsletter/default.aspx?year=2006&article=newsv13i2BrennanEtAl>.

⁶⁴ Karan Dhadialla, *Patent Trolls Under the Patent Reform Act*, BERKELEY TECH. L.J. BOLT (Oct. 15, 2011), <http://btlj.org/2011/10/15/patent-trolls-under-the-patent-reform-act/>.

⁶⁵ E.g., Myers, *supra* note 61, at 334.

⁶⁶ *Id.* at 335.

⁶⁷ Rajkumar Vaikhari, Note, *The Effect of Patent Trolls on Innovation: A Multi-Jurisdictional Approach*, 1 INDIAN J. OF INTELL. PROP. L. 64, 67 (2008), available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1320553&rec=1&srcabs=1314374.

will construe the claims. Rather than entering a lengthy and expensive litigation process in which they have little guidance as to how a court will construe the asserted claims, manufacturers enter settlement agreements with the trolls.

¶37 Manufacturers, then, are entering settlement agreements because they are cheaper than litigation costs and because the court could construe the claims broadly to hold the manufacturers liable for infringement. Thus, trolls are using the manufacturer's uncertainty as to how a court will interpret a needlessly ambiguous claim and fear of exorbitant litigation costs to extort settlement agreements. More clearly defined claims would significantly limit a troll's ability to extort funds from manufacturers because both manufacturers and courts would be able to identify a single patent scope. If the manufacturer's device or process reads on that scope, then he will likely opt for settlement. If, in the more likely case, the troll is asserting a patent that does not read on the manufacturer's device or process, the manufacturer can proceed through litigation and claim construction with confidence that the court will apply the same meaning to the claim terms and rule in the manufacturer's favor.

¶38 Secondly, more clearly defined claims will reduce the time courts spend in claim construction. An attenuated claim construction period leads to reduced litigation costs. With litigation costs diminished, a major concern for manufacturers faced with infringement suits from trolls is eliminated. Currently, however, the manufacturer might still be tempted to accept a settlement agreement if it requires the manufacturer to pay far less than it would in litigation, even if the manufacturer is confident that the court will rule in its favor. Reduced litigation costs through clearly defined claims incentivize manufacturers to challenge the troll's meritless claims through litigation rather than accepting unfavorable settlements.

¶39 This is not to say that more clearly defined claims would eliminate the troll's presence in the patent landscape altogether. Rather, regulations requiring applicants to draft clearly defined claims would limit the troll's harmful impact on the patent system. Unfortunately, the America Invents Act did not address the claim drafting reform necessary to fix our nation's patent system.

III. AMERICA INVENTS ACT

¶40 In an effort to overhaul the flawed patent system, Congress passed, and the President signed into law, the America Invents Act.⁶⁸ Congress has wrestled with this Act since 2005 to address issues in both patent prosecution and litigation. As described in greater detail below, the Act changes the filing system at the PTO, institutes new procedures for challenging patents, and creates a new fee collection structure for applications at the PTO.⁶⁹ Although the America Invents Act makes beneficial changes to the U.S. patent system, it does not reach the root of the problem at the claim drafting level.

¶41 Most notably, the America Invents Act moves U.S. patent law away from a "first-to-invent" system. Under this system, the courts and PTO granted patent rights to the first party to conceive of and reduce to practice the invention. Even if one party filed for

⁶⁸ Leahy-Smith America Invents Act, Pub. L. No. 112-29, § 6, 125 Stat. 284, 299 (2011).

⁶⁹ *Id.*

a patent before another, the latter would be entitled to the patent rights if he could prove that he was the first to conceive of the invention. If the two parties disputed who was the first to conceive of the invention, the parties would present evidence in court or interference proceedings.

¶42 For patent applications having an effective filing date on or after March 16, 2013, conception and reduction to practice are no longer relevant in patentability analysis. Instead, the U.S. will follow the system more consistently applied internationally—the “first-to-file” system.⁷⁰ This eliminates the need to hold interference or court proceedings to determine which inventor independently conceived of their invention within a span of a few weeks or months. The first-to-file system should therefore reduce both litigation costs and patent examination time. However, while the new rule is more straightforward than the first-to-invent rule, some argue it favors big businesses that have the money and lawyers to quickly file for patents over small businesses and entrepreneurs.⁷¹ Still, the change is the most significant in the America Invents Act, and one that will at least moderately improve the U.S. patent system.

¶43 The Act also provides new ways for third parties to challenge bad patents through pre-issuance submissions⁷² and post-grant review.⁷³ Pre-issuance submissions will allow third parties to provide the PTO with potentially invalidating prior art, but only while a patent application is pending.⁷⁴ Post-grant review will allow a third party to present legal challenges to a patent to the PTO, but only in the first nine months after the patent issues.⁷⁵ Both processes should have the intended effect of minimizing the number of bad patents the PTO issues without depleting judicial resources.

¶44 To take advantage of these changes, however, parties must constantly monitor the activity of the PTO. Critics argue that such legislation once again benefits big business with the resources to monitor activity within the PTO and only provides more jobs for patent attorneys rather than entrepreneurs.⁷⁶ Therefore, though pre-issuance submissions and post-grant review offer new avenues to challenge bad patents, they are unlikely to make serious improvement to the patent system unless the general public becomes more cognizant of the PTO’s inner workings.

¶45 Many have argued that the best way to improve the quality of patents issued by the PTO is for Congress to provide more funding to the PTO to hire more examiners.⁷⁷ By hiring more examiners, the PTO could to reduce its application backlog. Currently, Congress controls the PTO’s budget and sets its fees.⁷⁸ The America Invents Act, however, enables the PTO to set its own fees in an effort to improve its patent

⁷⁰ *Id.* § 3.

⁷¹ See, e.g., Brad Plumer, *Everything You Need to Know About Patent Reform in One Post*, WASH. POST, Sept. 26, 2011, 5:30 PM, http://www.washingtonpost.com/blogs/wonkblog/post/everything-you-need-to-know-about-patent-reform-in-one-post/2011/09/06/gIQAOD4V7J_blog.html.

⁷² Leahy-Smith America Invents Act § 8.

⁷³ *Id.* § 6.

⁷⁴ *Id.* § 8.

⁷⁵ *Id.* § 6.

⁷⁶ Timothy B. Lee, *Mostly Pointless Patent Reform Bill Goes to Obama for Signature*, ARS TECHNICA (Sept. 8, 2011, 4:48 PM), <http://arstechnica.com/tech-policy/news/2011/09/mostly-pointless-patent-reform-bill-goes-to-obama-for-signature.ars>.

⁷⁷ See, e.g., Allen E. Hoover, *Let's Run the PTO as a Business*, 14 INTELL. PROP. TODAY 12, 27 (2007).

⁷⁸ See, e.g., 35 U.S.C. § 41 (2006).

examination process.⁷⁹ However, Congress will continue to have some budgetary power and be able to appropriate funds that the PTO will place in escrow.⁸⁰ For this reason, critics question how much the Act will actually increase funding at the PTO to overhaul IT and hire more examiners.

¶46 The America Invents Act failed to address other areas of the patent system. The Act does nothing to limit patent damages by aligning them with any actual value of a patented invention. Similarly, patent trolls are not deterred from extorting more funds from innovators and manufacturers. Furthermore, although the Act makes beneficial changes to improve the patent system, it does so peripherally, without reaching the root of the problem: claim-drafting regulation.

IV. PROPOSED SOLUTION

A. Implementation

¶47 This paper makes a simple proposal to improve many flaws of the U.S. patent system. Inventors applying for a patent with the PTO should be required to submit a claim chart included in their application. This procedural alteration would enhance a third party's understanding of the invention's scope in a much more timely fashion than the present system. The change will improve patent examination quality at the PTO and reduce litigation costs spent in claim construction.

¶48 Parties generally draft claim charts in litigation to argue their position that a device or process does or does not infringe on the asserted claims. Therefore, the plaintiff will provide a broad definition of the claims in order to persuade the court that the defendant has infringed on the claim. Conversely, the defendant will provide a narrow interpretation to avoid infringement. Instead of courts continuing this time-consuming practice of requiring competing claim charts to determine an ex post definition of the claims, they should require the claim chart and associated definitions within the patent itself.

¶49 The claim chart included within the application would provide great benefits for patent examiners and those who must interpret the claims. As an example, consider U.S. Patent No. 7,269,636 (see *infra* Appendix). Claim 1 reads:

A method of operating a computer network to add function to a Web page comprising:

downloading said Web page at a processor platform, said downloading step being performed by a Web browser;

when said Web page is downloaded, automatically executing a first code module embedded in said Web page;

said first code module issuing a first command to retrieve a second code module;

⁷⁹ Leahy-Smith America Invents Act § 10.

⁸⁰ *Id.*

assembling in response to said issuing operation, said second code module having a service response;

said first code module issuing a second command to initiate execution of said second code module; and

initiating execution of said second code module at said processor platform in response to said second command.⁸¹

¶50 This is the first of 29 claims that will legally define the patent scope. However, without more, it is almost impossible for a third party to determine the invention's scope from the language in Claim 1. To do so, the third party would have to meticulously examine the twenty pages of support in the highly technical specification. This would most likely require multiple readings of the specification while noting where each claim term is defined or described.

¶51 Claim 1 is not necessarily a poorly written claim, and its ambiguity is certainly not an anomaly in claim drafting. Patent drafting is a difficult process. It is a great skill for one to be able to transform each of the invention's features into words. Furthermore, as described earlier, those drafting the claims must balance the interests of using language narrow enough to avoid rejection by the PTO and broad enough to protect the inventor's intellectual property rights and ability to sue infringers. Claim 1 has achieved both goals. The patent has been issued and the claim's language is ambiguous and broad enough for the patentee to assert it against third parties performing a wide variety of processes.

¶52 Now, consider the proposed claim chart below, tying each of Claim 1's limitations to its definition within the specification, along with an example of the limitation:

TABLE 1.

CLAIM 1	SPECIFIC DEFINITION	EXAMPLE	PRIOR ART (OPTIONAL)
A method of operating a computer network to add function to a Web page comprising	“function, such as streaming media or other media services” – col. 5, l. 38-40 See Fig. 4 (111)	A method for adding to a web page, like Yahoo.com, a pop-up that looks like a radio and plays streaming music	U.S. Patent No. 5,796,952 – also includes a method within a computer network adding different functions to a web page col. 2, l. 40-45
downloading said Web page at a processor platform, said	“Second processor platform 24 includes a CPU 40, a memory 42, input/output lines 44, an input device 46, such as a	Yahoo.com is downloaded by Internet Explorer at a personal	U.S. Patent No. 5,796,952 – web browser downloads a

⁸¹ U.S. Patent No. 7,269,636 (filed July 1, 2003).

downloading step being performed by a Web browser	<p>keyboard or mouse, a display device 48, such as a display terminal, and speakers 50.” – col. 4, l. 9-12</p> <p>See Fig. 1 (24)</p> <p>“Web browser 52 is software which navigates a web of interconnected documents on the World Wide Web via Internet 28.” – col. 4, lines 23-25</p> <p>See Fig. 1 (52)</p>	computer	web page at client col. 5, l. 12-16
when said Web page is downloaded, automatically executing a first code module embedded in said Web page	<p>“First code module 36 executes enough functionality to act as a “bootstrap loader” in order to load second code module 90” – col. 5, l. 9-11</p> <p>See Fig. 1 (36) and Fig. 2</p>	When Yahoo.com is downloaded at the personal computer a piece of code within Yahoo.com is executed to load a second piece of code	N/A
said first code module issuing a first command to retrieve a second code module	<p>“A first command line (LINE NO. 1) 92 contains an exemplary initialization for a first command 93, i.e., a script, that will activate a Web address 94 for contacting server system 26 (FIG. 1) and call CGI program 84 into execution. In addition, first command line 92 communicates Web address 38 to server system 26 via a network connection 96 (FIG. 1) over Internet 28...CGI program 84 initiates the downloading of second code module 90 to a second processor platform.” – col. 5, l. 14-24</p> <p>See Fig. 2 (92, 93, 94)</p>	The first piece of code within Yahoo.com loads the second piece of code by issuing command	N/A
assembling in response to	“Task 144 causes processor 62 (FIG. 2) to form a service	Once the command to	N/A

said issuing operation, said second code module having a service response	response indicating a denial of service. In a preferred embodiment, a desired service response is media appliance metaphor 111 functioning to provide streaming media, in this case music, along with Web page 34. However, with respect to task 144, the service response indicating denial of service may be the media appliance metaphor 111 having a slash through it. Alternatively, the service response may simply be an absence of any media appliance metaphor.” – col. 7, l. 60 – col. 8, l. 1 See Fig. 11 (111)	retrieve the second piece of code is issued, the second piece of code is assembled to include the radio graphic for Yahoo.com	
said first code module issuing a second command to initiate execution of said second code module	“Fourth command line 104 contains a second command 106 that initiates execution of second code module 90 that was downloaded to temporary memory 54 of second processor platform 24.” – col. 5, l. 30-35 See Fig. 2 (104)	The first piece of code within Yahoo.com issues a second command to initiate execution of the second piece of code	N/A
initiating execution of said second code module at said processor platform in response to said second command	See Fig. 3 (246, 248)	The second piece of code is executed and the radio graphic is displayed on Yahoo.com at the personal computer in response to the second command to initiate execution	N/A

¶53

As seen above, the first column displays Claim 1, with claim limitations separated by rows. The second column serves dual purposes—it provides support for the limitations in the specification and, more importantly, defines certain claim terms using the specification. Notice that not all terms from column 1 are defined in column 2. Only

those terms for which the applicant was the lexicographer are defined. All other terms should be given their plain and ordinary meaning.

¶154 Take the limitation recited in row 1 as an example. The limitation is “A method of operating a computer network to add function to a Web page comprising.” The only term in this limitation that is described in the specification beyond its plain and ordinary meaning is “function.” Therefore, the definition from the specification for “function” is quoted verbatim in column 2. Further, the inventor cites the quotation by column and line number to allow claim chart readers to quickly locate the definition in the specification.

¶155 The second column also cites relevant figures representing the claim limitation. This is another aid to help readers more quickly ascertain the claim’s scope. A representative figure may not always be available, but when one exists, the inventor should similarly cite it in the claim chart. Looking again at row 1, the citation reads “See Fig. 4 (111),” meaning element 111 within Figure 4.

¶156 The first two columns are fairly standard for claim charts. Most claim charts separate claim limitations in a manner similar to column 1. Column 2 generally recites a portion of a specification that one can interpret to read on the claim limitation. However, the specification in other claim charts is usually one of a prior art reference used to invalidate the patent. The proposed claim chart, instead, cites the asserted patent’s specification.

¶157 The final two columns are unique to the proposed claim chart. Column 3 provides a “real world” example of the claim limitation. This column’s purpose, similar to the first two, is to provide the reader with a quicker, more thorough understanding of the claim. The example provided for row 1 is “A method for adding to a web page, like Yahoo.com, a pop-up that looks like a radio and plays streaming music.” A reader, after reviewing column 3, now has a clear idea of what the first claim limitation was attempting to convey.

¶158 The first claim limitation is not exclusively referring to radio graphics that play streaming music. The scope goes further than that. Therefore, examples listed in column 3 of the claim chart *will not* limit the invention’s scope. Instead, applicants should recognize that they are simply providing one of the possibly many embodiments of the invention. Still, a real world example of the embodiment described in layman’s terms will give the patent reader a quicker understanding of the limitation and the ability to envision similar embodiments.

¶159 Ideally, the PTO will require the claim chart as a section of the application after the “Detailed Description of the Invention” and before the claims. This claim chart would only include the first three columns. However, the PTO could instead require the claim chart to be a separate form that the applicant submits to the PTO. The examiner would then receive the application along with the claim chart form including column 4. If the examiner finds a prior art reference that reads on the claim limitation, then she would cite that portion of the reference in column 4. The applicant would receive the updated claim chart along with, or in lieu of, the Office Action rejecting the application.

¶160 The claim chart above was created for independent Claim 1. In some cases, the dependent claims may be self-explanatory and a separate claim chart for each claim may be excessive. Therefore, applicants do not necessarily need to submit charts for all the

claims. Rather, the PTO could require claim charts for all independent claims and make them optional for dependent claims.

B. Benefits

¶61 Compare Claim 1 alone with the sample claim chart, and the benefit to this paper's proposal becomes apparent. Third parties reviewing the claim for the first time will more quickly understand its scope after reading the claim chart. After reading the claim alone, a third party would have no clue what the inventor meant by "function" or "service response," for example. The reader could gain an understanding of the claim by reviewing the specification and drawings. However, this is an arduous, time-consuming process. The claim chart does the work for the reader so he can quickly and easily access definitions and examples of the claim terms.

¶62 Employing the claim chart within the patent application should be a minor modification for the patent applicant. A patent applicant is already required to support each claim element in the specification. However, currently, applicants have very lax regulations for tying their claim terms to the specification. So, applicants or their attorneys can draft very long and dense specifications and use ambiguous terms in the claims that third parties could reasonably interpret in a variety of ways from the specification. This is especially beneficial when the PTO construes the claims narrowly, thereby avoiding prior art rejection, and the patentee then asserts the claims in an infringement suit as broadly as possible.

¶63 Although prosecution history estoppel prevents applicants from limiting claim scope in prosecution and then expanding it in litigation, the estoppel only applies when the applicant expressly limited the scope in prosecution.⁸² If the patent examiner reviewing the application interprets the claims narrowly, prosecution history estoppel does not apply. Examiners are taught to give claim terms their "broadest reasonable interpretation," but given the ambiguity of the claim terms in view of the specification, examiners overlook prior art references that can be used to reject a broad claim. Certainly, the examiners' stringent time constraint makes it even more difficult to review the application and search for relevant prior art references to reject it in an Office Action. The PTO and U.S. government should recognize the PTO's internal flaws and adapt claim-drafting regulation to ease the PTO's burden.

¶64 The claim chart forces the applicant to define the claim terms with clarity. An applicant's focus will no longer be on the narrow/broad art of claim drafting. Ambiguous claim terms will lose their ability to transform between prosecution and litigation. Instead, claims will be easily understandable, and patents will be granted on their merits. Applicants may still be their own lexicographers, but the new terms must be defined in the claim chart. Otherwise, they will be given their plain and ordinary meaning.

¶65 The claim chart's benefit to patent examiners is tremendous. With less than eighteen hours on average to examine an application, it is unreasonable to expect a patent examiner to review and understand entire applications, let alone to find the most pertinent prior art. The time the examiner saves by reviewing the claim chart and the clarity he gains from the chart's definitions and examples provide him with extra valuable hours to

⁸² See *Phillips v. AWH Corp.*, 415 F.3d 1303, 1317–18 (Fed Cir. 2005) (en banc).

search relevant prior art that might be used to reject the claims. This results in the PTO issuing fewer bad patents.

¶166 With fewer bad patents in the market, needless patent suits will be diminished. This is particularly true for patent trolls. Patent trolls thrive in conditions in which litigation is lengthy and expensive and in which they can essentially gamble on the chance that the court will construe ambiguous claim terms in their favor for exorbitant damages recovery. Trolls use these conditions to extort settlements from manufacturers.

¶167 The proposed claim chart adjusts these conditions by removing the claims' ambiguity. This has the positive benefit of reducing litigation, or more specifically claim construction, and the associated litigation costs. Further, the manufacturer's concern that the courts may read the claims broadly enough to encompass the alleged infringement is eliminated because all relevant parties will have the single patent scope at their convenience within the claim chart. Consequently, the proposed claim chart reduces the troll's incentive to threaten bad faith litigation in an attempt to extort settlement agreements.

¶168 This paper's proposal will drastically reduce the preparation time, and associated attorney's fees, for *Markman* hearings because parties will no longer need to provide their own claim charts. Rather than spending months submitting competing claim charts to the court and to one another, the parties will simply refer to the claim chart presented in the patent. The court will then define each limitation as it is listed in column 2 of the chart. If the patentee did not include a definition in the chart, the court will give the limitation its plain and ordinary meaning.

¶169 The proposal does not eliminate the court's need for *Markman* hearings. Instead, the proposal reduces litigants' preparation time and the hearing's length, which can be up to six months.⁸³ Parties in litigation will not need to pay fees as their attorneys draft charts in an attempt to identify the most beneficial claim construction. The proposal provides the courts and all other interested parties with the claim construction. Parties will now use patent litigation, as they should, arguing that the defendant's device or process does or does not read on the asserted claims, not arguing what those claims mean.

¶170 As previously discussed, the claim chart will be a tremendous aid for examiners reviewing patent applications at the PTO. This, in turn, will reduce the number of bad patents that the PTO issues. Nevertheless, the PTO will still issue a number of patents on which a prior art reference already reads. When plaintiffs assert these patents in infringement suits, the defendants often counter with invalidity contentions.

¶171 Through invalidity contentions, defendants compare each limitation of the asserted claims to the prior art to show why the claims are invalid. Just as the proposed chart aids the court in its claim construction, it further aids the court in its invalidity analysis. Specifically, in cases in which the prior art reference is a patent or published application, the court can compare the claim charts within those references with the claim chart included with the asserted patent to determine whether it should invalidate the claims. Currently, both parties submit their own claim charts in litigation to argue whether the prior art reference reads on the asserted claims. However, the proposed claim chart will, once again, provide the court with an unbiased, previously supplied definition of the

⁸³ Gerald J. Flattmann, Jr., *Anatomy of a Patent Infringement Case*, 825 PLI/PAT 71, 85 (2005).

relevant claim limitations. Accordingly, the proposed claim chart will aid the court in its invalidity analyses.

V. CONCLUSION

¶72 The current regulations that allow patentees to draft malleable claims that can change depending on a party's interest are at the root of the nation's patent system problems. This paper has offered a proposal to reform patent law by requiring patent applicants to clarify their claim limitations. Specifically, the PTO should require applicants to submit a claim chart defining each claim element and to link it to the specification along with a real world example of the claim limitation.

¶73 If implemented, the proposal will drastically improve the PTO's patent examination quality. Rather than scouring the specification for support in understanding the claim terms, the examiner can quickly determine the metes and bounds of the invention. Therefore, examiners can spend less time reviewing each application and make a significant dent in the current backlog. Furthermore, a quicker understanding of the claims allows examiners to spend more time searching for relevant prior art—time that they would have before spent interpreting the claims.

¶74 Similarly, the proposal will diminish patent litigation costs because courts will have to spend less time in claim construction. The America Invents Act addressed many areas of patent law in need of reform. However, these changes failed to address the greatest problem with our nation's patent law—the claims. This paper's proposal offers tremendous improvements to U.S. patent law at almost negligible cost.

APPENDIX



(12) **United States Patent**
McCallum et al.

(17) Patent No.: **US 7,269,636 B2**
(4) Date of Patent: **7 Sep. 11, 2007**

(51) **METHOD AND CODE MODULE FOR ADDING FUNCTION TO A WEB PAGE**

(60) Inventors: **Charles P. McCallum, Pasco, AZ (US); Andrew L. Burgess, Jr., Davenport, IA (US)**

(62) Assignee: **Mediawave, Inc., Phoenix, AZ (US)**

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 321 days.

This patent is subject to a terminal disclaimer.

(21) Appl. No. **10/614,490**

(22) Filed: **Jul. 8, 2003**

(25) **Priority Publication Data**

US 20040060405 A1 Jan. 8, 2004

Related U.S. Application Data

(63) Continuation of application No. 10/942,156, filed on Dec. 26, 2004, now U.S. No. 6,549,591.

(71) **Int. Cl.**

G06F 15/16 (2006.01)
G06F 15/72 (2006.01)

(72) **U.S. Cl.** 709/218; 709/219; 709/217; 709/219; 709/223; 709/224; 709/225; 709/227; 709/228; 709/229

(23) **Field of Classification Search** 709/209; 709/215; 709/218; 709/223; 709/224; 709/225; 709/227; 709/229

See application file for complete search history.

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Primary Examiner: Nathan J. Flynn

Assistant Examiner: Jack Paul

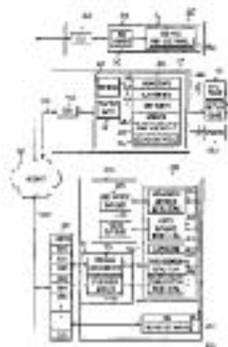
(74) **Attorney, Agent, or Firm:** Jordan M. Roszkow;

Lawell W. Gresham; Charles J. Jacobs

(57) **ABSTRACT**

A computer network (20) includes a first processor (22) for retrieving a Web page (24) having an embedded first code module (28) and accessing through a Web browser (32) a second processor (24) supporting a Web browser (32) for downloading the Web page (24) and executing the first code module (28). When executed, the first code module (28) inserts first content (33) to create a second code module (36) from a server system (26). The server system (26) includes a database (48) having a service response (102, 178, 186) associated with the Web address (36). A processor (62) accesses the second code module (36) using the service response (102, 178, 186). When the second code module is retrieved, the first code module (28) inserts a second document (406) to enable execution of the second code module (36) to provide added function to the Web page (24).

25 Claim, 4 Drawing sheets



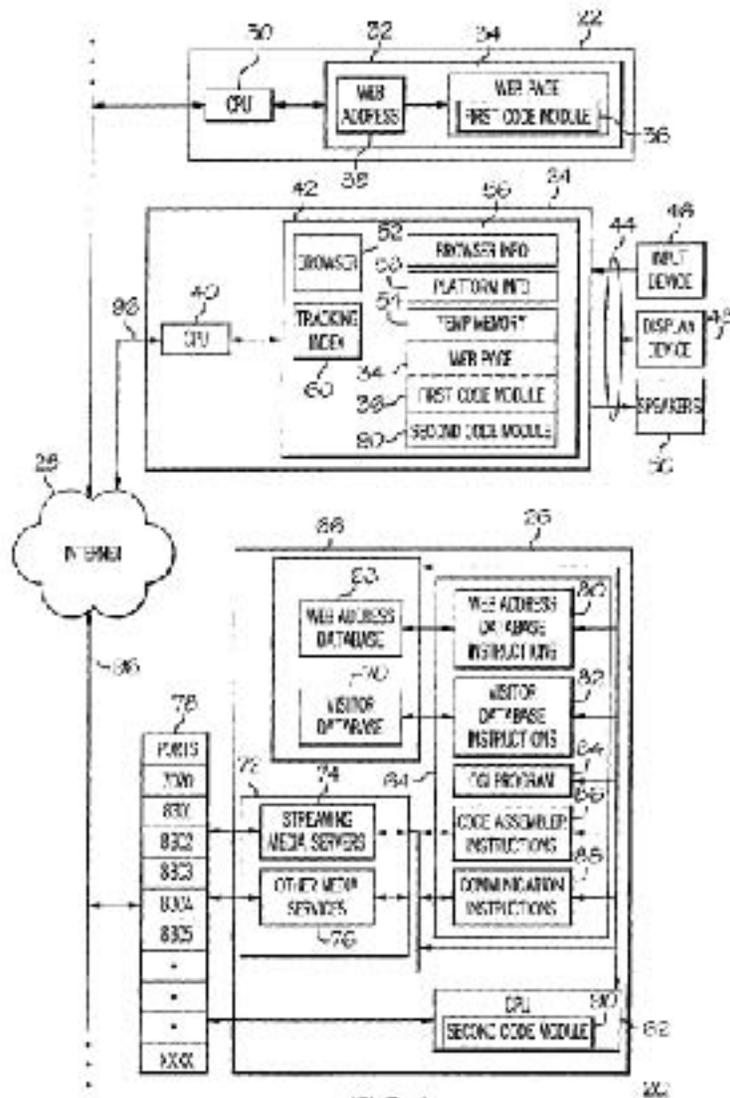


FIG. 1

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	LINE NO.	93 CODE
92	1	<script src= "http://osserver.domainname.com/ cgi- bin/osservercall.cgi"> 94
98	2	</script>
100	3	<script>{ 102
104	4	BSLStart (); 106
108	5	//></script> 102

36

FIG. 2

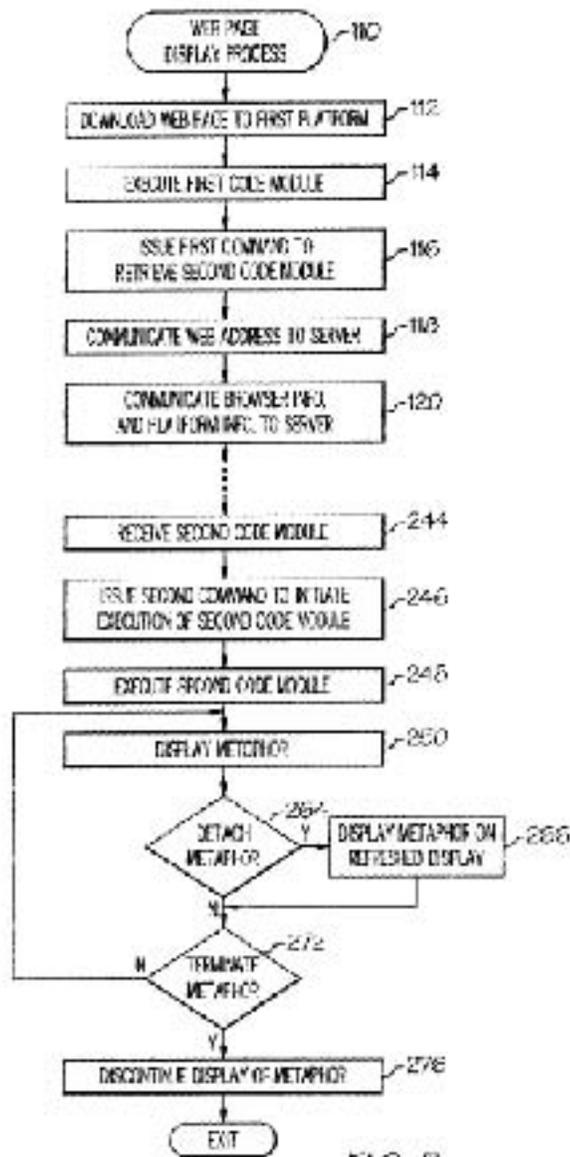


FIG. 3

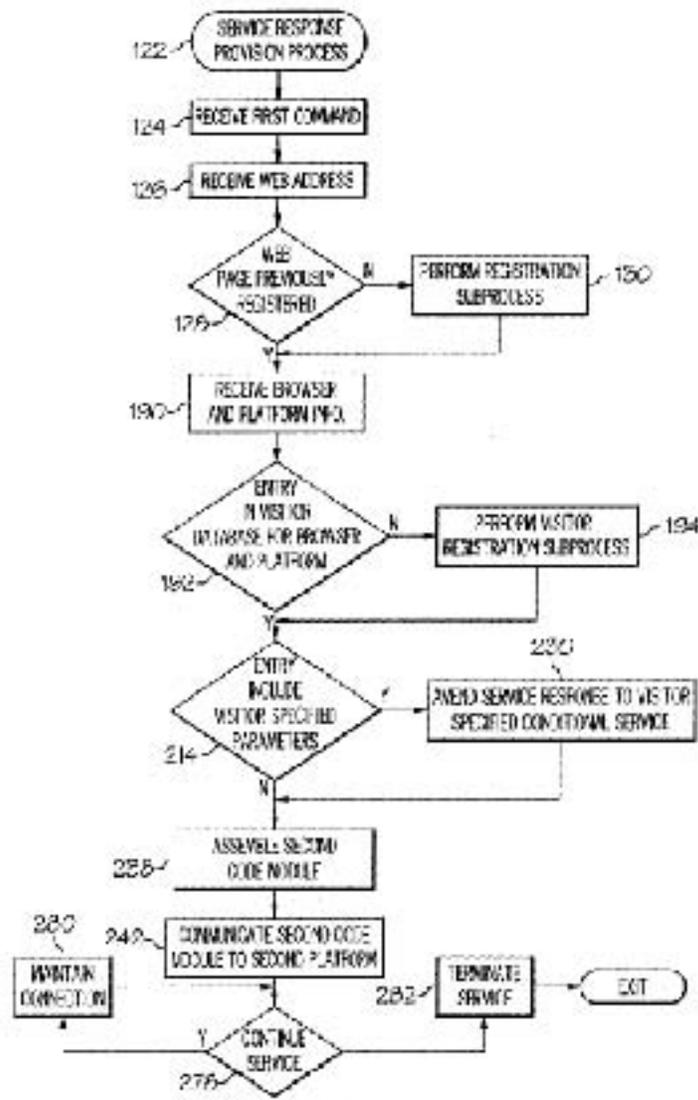


FIG. 5

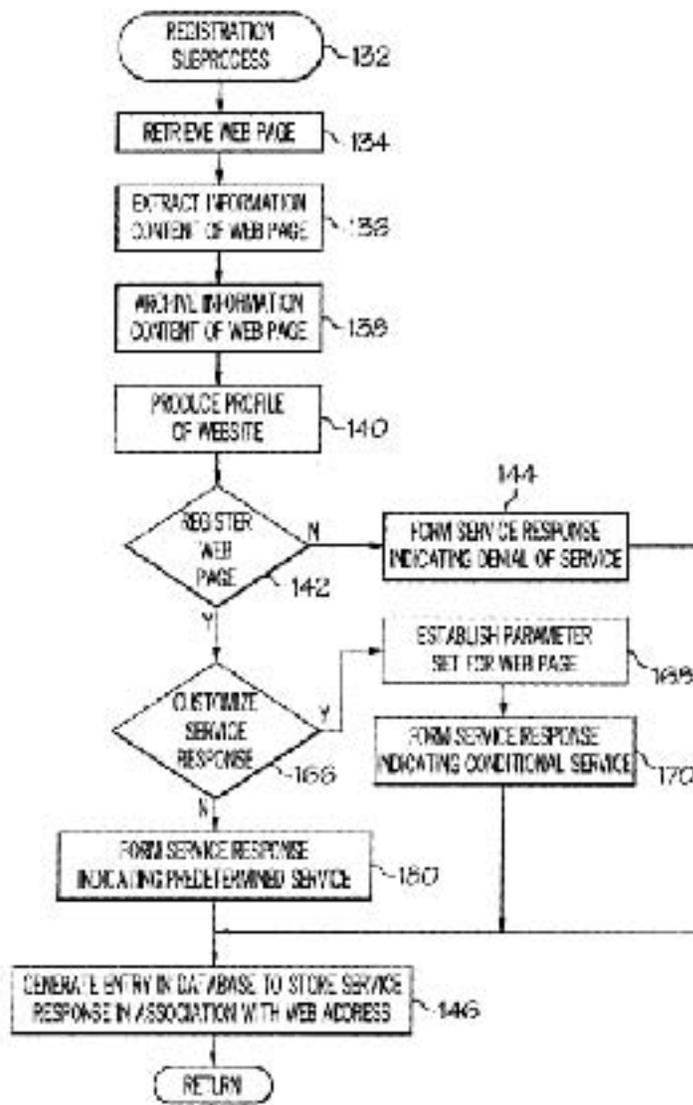


FIG. 6

150	152	154	
WEB ADDRESS FIELD	MOBILE FIELD	SERVICE RESPONSE FIELD	PARAMETER SET FIELD
158 URL 1 160	RECREATION GOLF	162 DENIAL OF SERVICE	164 DENIAL CONTENT
172 URL 2 174	TEXAS OCCUPING	166 CONDITIONAL SERVICE	170 CONDITIONAL CONTENT (INCLUDING URL 2)
182 URL 3 184	WEDDING	186 PREDETERMINED SERVICE	188 PREDETERMINED CONTENT
202 URL 4	204 FOOTBALL	206 PREDETERMINED SERVICE FLAG- CONDITIONAL SERVICE FOR TRACKING INDEX 208	208 PREDETERMINED CONTENT
⋮		⋮	
URL n			

FIG. 7

62

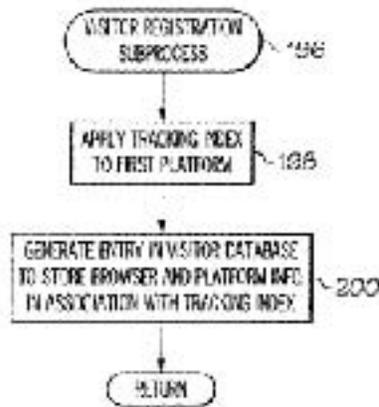


FIG. 8

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The diagram shows a table with four columns and six rows. The columns are labeled at the top as 202, 204, 206, and 208. The first row contains the text 'TRACKING INDEX', 'BROWSER ID', 'PLATFORM ID', and 'VISITOR PREFERENCES'. The second row contains 'SECOND PLATFORM', 'BROWSER INFO', 'PLATFORM INFO', and 'VISITOR SPECIFIED PARAMETER SET'. The third row contains the numbers '58' and '59' in the second and third columns respectively. The table is enclosed in a box labeled 60. A bracket on the right side of the table is labeled 212. The number 70 is located below the table.

202	204	206	208
TRACKING INDEX	BROWSER ID	PLATFORM ID	VISITOR PREFERENCES
SECOND PLATFORM	BROWSER INFO	PLATFORM INFO	VISITOR SPECIFIED PARAMETER SET
	58	59	

FIG. 9

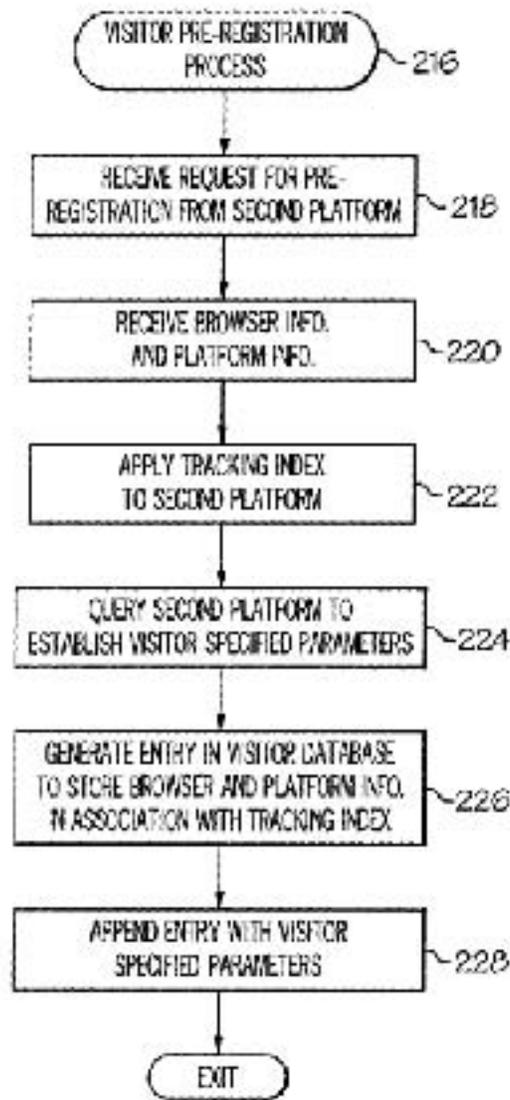


FIG. 10

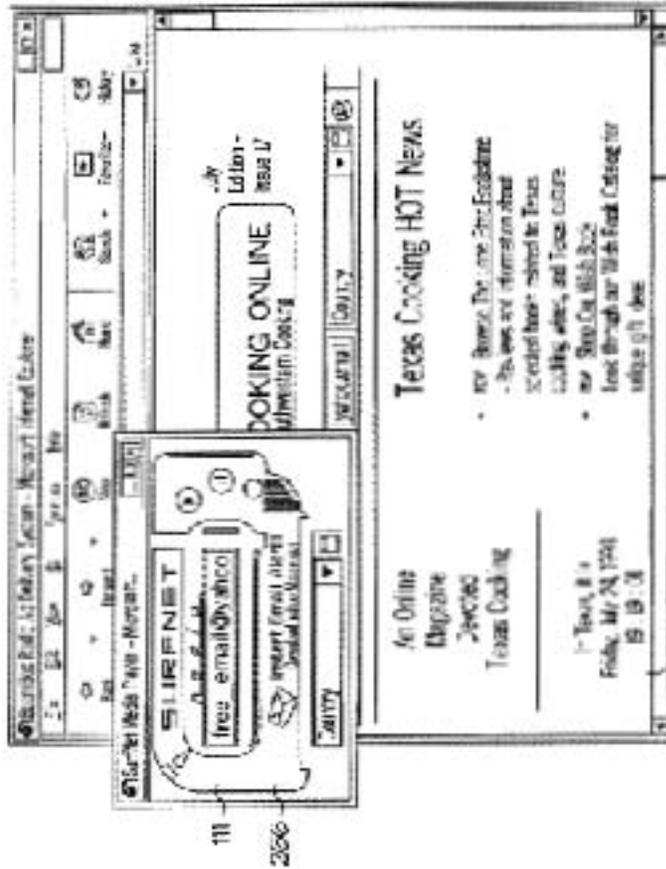


FIG. 11

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1
METHOD AND CODE MODULE FOR
ADDING FUNCTION TO A WEB PAGE

RELATED INVENTION

The present invention is a continuation of "Method And System For Adding Function To A Web Page," U.S. patent application Ser. No. 09/020,357, filed 25 Oct. 1999, now U.S. Pat. No. 6,594,698, which is incorporated by reference herein.

TECHNICAL FIELD OF THE INVENTION

The present invention relates to the field of computer networks. More specifically, the present invention relates to methods and systems for adding function to Web pages that are accessible through the Internet.

BACKGROUND OF THE INVENTION

The worldwide network of computers commonly referred to as the "Internet" has seen explosive growth in the last several years. The Internet is expected to continue with the adaptation of new forms of interactive technology applied to the basic Internet infrastructure which consists of many elements, not the least of which are the Web browser and Web page.

Users of Web pages, often Web sites, are craving for a high level of sophistication and responsiveness. Small to large corporations are taking advantage of the real and electronic commerce (E-commerce), that is, business transactions taking place over the Internet, resulting at a rapid pace. It is highly desirable for those who would like to carry out commerce on the Internet to have a very sophisticated Web site that can perform various functions and services to an increasingly sophisticated class of Web site users. Such Web sites may desirably include such information services as searchable databases for price, stock, shipping, and product information; cooperative companies; and so forth.

In order for such information services to be successfully communicated to potential customers, it is imperative to gain the interest of large numbers of Internet users. As with many traditional forms of commerce, advertising plays an important role in finding customers. Accordingly, what is needed is an efficient, yet effective, advertising and publicity in order to reach the masses of Internet users.

A recent advance in Web site technology is the addition of streaming media, as well as other more sophisticated functional enhancements, to Web sites. The concept of streaming media is defined broadly as audio and video being delivered to a Web site either in packets over the Internet. The streaming media can be delivered to, quickly, the user's computer and the profile images can be viewed and used on immediately comparable in quality to compressed, once the audio or television. Some examples of streaming media include houses, information, books using "audiobook", audio files, documents, and so forth.

Unfortunately, it is expensive to produce transmissions of Web sites. Significant costs for delivering streaming media may be prohibitively expensive. In addition, because problems associated with the complexity of producing the streaming media has to be broken down by Web sites, and creating of the streaming media if it is proprietary.

A typical example of adding function to a Web site is the addition of an "affiliate" program. An affiliate program, provided by a third party may be desired by the Web site

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developer to add functionality to their Web site for the purpose of increasing the appeal of the site or for revenue earning in which they will receive percentages of sales. In order to obtain such an affiliate program, the Web site developer may be required to register with the supplier of the affiliate program to enter a contract and receive the affiliate program in connection with their Web site. Unfortunately, such a registration process typically requires the Web site developer to fill out lengthy on-line electronic forms. Such forms may be cumbersome and frustrating. The filling out such forms leads to time abandonment on the part of the Web site developer. If the Web site developer successfully manages to register the Web site developer must then wait for the implementing code for the affiliate program to be emailed to him/her. Once the Web site developer receives the implementing code, the code is then copied and pasted into the Hypertext Markup Language (HTML) of the Web site where desired.

Unfortunately, universal capability with the Web browsers that subsequently access the Web site with the additional function provided by the affiliate program is limited. That is, even though a website developer has successfully added the implementing code for the affiliate program, all Web browser accesses the web site may not be able to interpret the affiliate program and the website visitor may not be able to experience the entire function.

SUMMARY OF THE INVENTION

Accordingly, it is an advantage of the present invention that a method and system for adding function to a Web page are provided.

It is another advantage of the present invention that a method and system are provided that are compatible with Web browsers which adhere to the standards for Hypertext Transfer Protocol (HTTP).

It is another advantage of the present invention that a method and system are provided that add function to a Web page through an easily distributed or hosted code module.

It is yet another advantage of the present invention that a method and system are provided that deliver services by client devices that are specific to problem and parameters.

The above and other advantages of the present invention are carried out in accordance with a method of operating a computer network to add function to a Web page. The method calls for downloading the Web page on a processor platform. When the Web page is downloaded, automatically executing a first code module embedded in the Web page. The first code module issues a first command to retrieve a second code module, via a network connection, from a server system, and the first code module issues a second command to initiate execution of the second code module at the processor platform.

The above and other advantages of the present invention are carried out in another form by a computer readable code module for adding function to a Web page. The code module is configured to be embedded in the Web page such as generated in a Hypertext Markup Language (HTML) and is configured for automatic execution when the Web page is downloaded to a client machine supporting a graphical user interface and a Web browser. The computer readable code module includes means for downloading a Web address of the Web page from a server system via a network connection to initiate a download of a second computer readable code module to the client machine. The computer readable code module further includes means for communicating first information characterizing said Web site, user, and server

FIG. 3A shows a service response 110 related to profile 174 including conditional service information 12 response field 154 for entry 172, and a conditional content parameter 158 associated with conditional service response 176 is used to limit an audible visual or other presentation of conditional service response 176.

With reference back to registration step 132 (FIG. 6), user processor 62 determines a query task 133 the service requested to be performed, registration information 132 proceeds to a task 136. Task 136 causes processor 62 to form a service request including a profile identifier, an address, service. Such a service request is determined by the entry controlling server system 25 (FIG. 1) in step 131. In controlling entry and determining the look and feel of media application interface 111 (FIG. 4), the particular media content to be used with media application interface 111, the user's profile number type, the content available to a visitor to Web page 34, and so forth.

Following task 136, step 132 proceeds to task 145 where an entry is generated in Web address database 60 (FIG. 7) to store the service response in association with the Web address. Again referring to Web address database 60 (FIG. 7), Web address database 60 includes a third entry entry 152. Third entry 152, generated in response to task 139 (FIG. 6) includes Web address 38 in Web address field 150 associated with URL 3. Again, field 154 in profile field 152 associated with URL 3 indicates Web page 34 to be targeted toward WEBSITE. A service response 180 including a promotional service is stored in service response field 154 for entry 152, and a promotional content parameter 188 associated with service response 180 is used to limit or enable, limit or remove content of promotional service response 180.

Following task 146 and the formation of service response 162 including a list of services, the formation of service response 176 including conditional service information 120 (formation of service response 166 including promotional and other page 34 is required), and subsequent 132 ends.

Referring back to service request of previous process 122 (FIG. 5), following task 130 in which registration information 132 (FIG. 6) has been performed or what query task 129 determines for Web page 34 (FIG. 3) identified by Web address 38 (FIG. 3) has been previously registered, process 122 continues with a task 130.

Task 130 causes processor 62 (FIG. 1) to receive browser information 55 (FIG. 1) and platform information 58 (FIG. 1) from second processor platform 24 (FIG. 1), and format previously browser information 55 includes, for example, make and version of Web browser 61, what plug-ins are currently present, and so forth. Platform information 58 includes, for example, make and version of platform 24, make and version of the operating system operating on platform 24, and so forth.

In response to task 130, a query task 132 is performed. Query task 132 causes processor 62 to execute a portion of visitor database instructions 62 (FIG. 1) to determine if there is an entry in visitor database 70 related to browser information 55 and platform information 58. When query task 132 determines that there is an entry in visitor database 70, indicating that a user of second processor platform 24 has not previously downloaded a Web page containing an audio media 55, provision process 122 proceeds to a task 134.

Task 134 causes processor 62 to further execute visitor database instructions 62 to perform a visit registration step 135 (FIG. 3) shows a visit registration step 135 of service response provision process 122. Visitor registration step 135 is performed for making vis-

its to Web page 34. Visitor registration step 135 generates visitor database 70 including visitor ID information and internet data may be useful for targeting advertising and other targeted function to Web page.

Visitor registration step 135 begins with a task 136. Task 136 causes processor 26 (FIG. 1) to apply a linking index 66 to second processor platform 24 via network connection 96. Linking index 66 also serves as a cookie, to identify a HTTP transaction to the entry controlling server system 26 in order to determine its history 42 (FIG. 1) of second processor platform 24. Linking index 66 also causes server 26 to store entry and media information on second processor platform 24. Linking index 66 is persistent meaning it remains in memory 42 (FIG. 1) of second processor platform 24 for subsequent use by server system 26. Linking index 66 is persistent, linking index 66 can be used by server system 26 to make a visitor, using second processor platform 24, to any Web page that has embedded therein an audio media 56.

In connection with task 136, task 200 is performed. Task 200 causes processor 62 (FIG. 1) to generate an entry in visitor database 70 to store visitor information 55 and platform information 58 in association with linking index 66. Following task 200, visitor registration step 135 ends.

FIG. 9 shows visitor database 70 generated by server system 26 of computer network 20. Visitor database 70 includes a plurality of tracking index field 202, a browser ID field 204, a platform ID field 206, and a visitor profile number field 208. Task 200 (FIG. 8) causes processor 62 (FIG. 1) to generate a visitor database entry 210 in visitor database 70. Tracking index field 202 is designated for tracking index, or cookie, such as tracking index 66 identifying second processor platform 24. Browser ID field 204 contains browser information 55 available in task 130 (FIG. 5) of previous process 122. Platform information field 206 is designated for platform information 58 received in task 130. Visitor profile number field 208 is designated for an optional visitor specified parameter set 212 associated in response to a visitor pre-registration process 216 (not shown).

Referring back to service response provision process 122 (FIG. 5), following task 134 in which visitor registration step 135 is performed or when query task 132 determines that entry 210 (FIG. 9) is present in visitor database 70, process 122 proceeds to a query task 214.

Query task 214 determines if entry 210 includes the specified parameter set 212. An associated previously visitor specified parameter set 212 may be visited if second processor platform 24 has previously performed a visitor pre-registration process.

FIG. 10 shows a visitor pre-registration process 216 performed prior to viewing Web page display process 110 (FIG. 3). Visitor pre-registration process 216 may be performed by a user of second processor platform 24 (FIG. 1) via an access device, for example, a visitor pre-registration process 216 allows users to have some preference control over any added function, such as media application interface 111 (FIG. 4) that they may encounter when downloading Web page having first audio media 56 embedded therein.

Visitor pre-registration process 216 begins with a task 218. Task 218 causes processor 62 (FIG. 1) of server system 26 to receive a request from second processor platform 24. Such a request may be received over a communication link, such as network connection 96, via Internet 20, following the achievement of an access request to second processor platform 24.

In connection with task 218, task 220 is performed. Task 220 causes processor 62 to receive browser information 55

of Web page 34, such communications may include content relevant to text parsing, the example text items 300a-d, tabboxes, and so forth. Thus, metaphor 111 is able to deliver content advertising to a user accessing Web page 34.

Moreover, 111 may include additional controls. For example, a drop-down menu 254 is provided for selection of a different video format. In addition, a control button 256 allows a user to forward and reverse media stream 363. Another control button 258 allows a user to play or pause video stream 251, and a volume slider 260 allows a user to adjust the volume. Further, control 252, an arrow image 262 (as used in metaphor 111, activate a portable mode (as described below).

In response to the display of metaphor 111, task 260, a query task 264 is performed. Query task 264 communicates processor platform 24, operating through Web browser 82, to determine if a command is detected to detach metaphor 111 from Web page 34 in order to activate a portable mode. A portable mode may be entered when a user clicks on arrow image 262. When task 264 determines that the portable mode has been selected, process 110 proceeds to task 266.

Task 266 causes server processor platform 24 to display metaphor 111 in a portable mode on a reduced display. FIG. 11 shows electronic display 48 presenting media application metaphor 111 detached from the Web page 34 and appearing in a portable mode 268. In an exemplary embodiment, when arrow image 262 is selected, metaphor 111 changes its appearance to portable mode 268. This change of appearance may utilize a predetermined response by server system 20 or a user specified preference set in a user registration process 215 (FIG. 10).

FIG. 11 shows electronic display 48 presenting a new Web page 270 overlaid on the second processor platform 24 and including media application metaphor 111 in portable mode 268. Thus, although Web page 34 (FIG. 11) is no longer being displayed on electronic display 48, a user of second processor platform 24 still can enter the information content supplied by metaphor 111.

Following task 266 and when query task 264 determines that metaphor 111 is not to be detached from Web page 34, query task 272 is performed. Query task 272 determines if display of metaphor 111 is to be concluded. Metaphor 111 may be terminated when a user selects processor platform 24 does not attach metaphor 111 from Web page 34 and downloads a subsequent Web page. In another exemplary scenario, second processor platform 24 may be voluntarily or automatically disconnected from server system 26 through the execution of kill command line 248 (FIG. 2) of first code module 36 terminating server command 106 (FIG. 2), or yet another exemplary scenario, metaphor 111 may be terminated when in portable mode 268 by clicking on the close window control, such as in X control 274 (FIG. 12).

When query task 272 determines that metaphor 111 is not to be terminated, program control loops back to task 260 to continue display of metaphor 111. However, when query task 272 determines that metaphor 111 is to be terminated, process 110 proceeds to task 276.

Task 276 causes server processor platform 24 to deactivate the display of metaphor 111 on display device 48. Following task 276, process 110 exits.

Referring to service response provider process 422 (FIG. 5), processor 62 (FIG. 11) of server system 26 performs query

task 278. Query task 278 is complementary to query task 272 of display process 110. That is, processor 62 initiates the termination of metaphor 111 in query task 272 and determines at query task 278 whether service should terminate.

Communication instructions 66 (FIG. 4) received by processor 62 include a timing parameter, or clock, that causes that a control to allow for a certain periodic check for continuation of service by query task 278, when service is to continue, process 122 proceeds to a task 280. Task 280 causes server system 26, through the configured external communication interface 88 of processor 62, to continue displaying streaming media associated with metaphor 111 to second processor platform 24. Following task 280, process 122 loops back to query task 278 to continue the periodic check for continuation of service.

When query task 278 determines that service is to be discontinued, process 122 proceeds to task 282. Task 282 causes server system 26 to terminate process 122. Task 282 also causes server system 26 to disconnect displaying streaming media associated with metaphor 111 to second processor platform 24. Following task 282, process 122 exits.

In summary, the present invention teaches of a method and system for a user, function, data or streaming media or other media service in a Web page, through an implementation of a simple code module embedded in the HTML of the Web page. The code module is compatible with Web browsers which adhere to the standards for Hypertext Transfer Protocol (HTTP) because it is implemented using a common subset of the current HTML standard command set. In addition, the code module is easily distributed through the Internet, and is readily copied and posted into a Web page during Web page development sessions and undergoes automatic execution and registration with minimal effort by the Web page developer. The present invention is able to take the added function based on information about the Web page in which it is embedded and based on a user specified preference.

Although the preferred embodiments of the invention have been illustrated and described in detail, it will be readily apparent to those skilled in the art that various modifications may be made therein without departing from the spirit and the invention or from the scope of the appended claims. The specification and drawings are accordingly to be regarded in an illustrative rather than restrictive sense. Furthermore, although the present invention is described in connection with a leading picture metaphor for providing streaming video, this is not intended to be limiting. For example, the metaphor may provide streaming video and other multimedia communication formats.

What is claimed is:
 1. A method of operating a computer network to add function to a Web page comprising:
 downloading a Web page at a processor platform, said downloading step being performed by a Web browser when said Web page is downloaded, automatically executing a first code module associated with said Web page;
 said first code module using a first command to release a second code module;
 assembling, in response to said releasing operation, said second code module having a service response;
 said first code module issuing a second command to initiate execution of said second code module; and
 initiating execution of said second code module at said processor platform in response to said second command.

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2. A method as claimed in claim 1, wherein said first code module issues said first command to initiate said second code module from a server system via a network connection.

3. A method as claimed in claim 1 wherein said assembling operation is performed on a server system, and said method further comprises downloading said second code module to said processor platform.

4. A method as claimed in claim 1 wherein said Web browser supplies Layered Fetching Protocol (LFP) and the code module and said Web page are generated in a Hypertext Markup Language (HTML) and said first code module includes a parameter for informing said Web browser to ignore said second command.

5. A method as claimed in claim 1 wherein said method further comprises:

receiving, at a server system, a Web address of said Web page;

determining if said Web page is registered with said server system; and

when said Web page is not registered, performing a registration of said Web page.

6. A method as claimed in claim 5 wherein said performing operation comprises:

receiving said Web page at said server system;

extracting informational content of said Web page;

analyzing said informational content of said Web page; and

creating a profile of said Web page in response to said extracting and analyzing steps.

7. A method as claimed in claim 5 wherein said service response is related to said profile of said Web page, and said method further comprises:

determining a service response in accordance with said Web address; and

returning said service response when said first code module issues said command so that said service response is related to said second code module.

8. A method as claimed in claim 1 wherein said service response is used as a dual of service location, a world-wide web address, and a predetermined service.

9. A method as claimed in claim 1 further comprising processing said service response at said processor platform in response to said initiating operation.

10. A method as claimed in claim 5 further comprising transferring said processing operation over a connection to said server system, of a dynamic service response data set from said processor platform.

11. A method as claimed in claim 1 wherein said service response is a metapage and said method further comprises the step of displaying said metapage in connection with said Web page at said processor platform.

12. A method as claimed in claim 11 further comprising the step of customizing said metapage to include a parameter or reference to said Web page, said customized metapage describing a condition, service presented, type, duration of said second code module.

13. A method as claimed in claim 1 further comprising the steps of:

receiving said second code module in response to said initiating operation, said second code module including a Web address for a second Web page;

downloading information content from said second Web page at said processor platform; and

presenting said information content in said service response at said processor platform.

14. A method of operating a computer network to add features to a Web page comprising:

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downloading said Web page at a processor platform, said downloading step being performed by a Web browser; when said Web page is downloaded, automatically executing a first code module embedded in said Web page;

said first code module issuing a command to initiate a second code module;

receiving, at a server system, information characterizing at least one of said processor platform and said Web browser;

assembling, in response to said issuing operation, said second code module having a service response, said assembling operation being performed at a server system and said assembling operation including said second code module in response to said information;

downloading said second code module to said processor platform; and

initiating execution of said second code module at said processor platform.

15. A method as claimed in claim 14 further comprising storing said information in a virtual data base of said server system, said information being associated with a tracking index.

16. A method as claimed in claim 15 further comprising the steps of:

approaching said tracking index to said processor platform in response to said information; and

using said tracking index of said server system to track and identify said processor platform.

17. A method of operating a computer network to add features to a Web page comprising:

downloading said Web page at a processor platform, said downloading step being performed by a Web browser; when said Web page is downloaded, automatically executing a first code module embedded in said Web page;

said first code module issuing a command to initiate a second code module;

assembling, in response to said issuing operation, said second code module having a service response, said service response is a metapage;

initiating execution of said second code module at said processor platform;

displaying said metapage in connection with said Web page on said processor platform;

detaching said metapage from said Web page; and

displaying said metapage unassociated from said Web page.

18. A computer readable code module for adding features to a Web page, said code module configured to be embedded in said Web page generated in a Hypertext Markup Language (HTML) and configured for automatic execution when said Web page is downloaded to a client machine supporting a graphical user interface and a Web browser, and computer readable code module including:

means for customizing a Web address of said Web page at a server system via a network connection to return a download of a second computer readable code module to said processor platform;

means for receiving an assembly, at said server system, of said second computer readable code module containing a service response related to said Web page;

means for downloading a download of said second computer readable code module to said processor platform;

means for initiating execution of said second computer readable code module following said download of said second computer readable code module; and

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means for providing a content by accessing said web browser to execute said initiating means.

18. A computer readable code module as claimed in claim 18 further comprising means for determining a location characterizing at least one of said Web browser and said client machine in said server system so that said installed second computer readable code module is responsive to said transaction.

19. A method of operating a computer network to add a function to a Web page, comprising:

downloading said Web page to a processor platform and downloading operation being performed by a Web browser;

when said Web page is downloaded, automatically executing a first code module embedded in said Web page, wherein execution of said first code module performs retrieval of a second code module;

receiving, at a server system, information from said processor platform;

receiving from said server system, said second code module using a service response, said service response being formed in response to said information;

downloading said second code module to said processor platform; and

initiating execution of said second code module at said processor platform.

20. A method as claimed in claim 21 wherein said information received at said server system characterizes at least one of said processor platform and said Web browser.

22. A method as claimed in claim 20 further comprising: obtaining information content of said Web page at said server system; and determining said service response related to said informational content.

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23. A method as claimed in claim 20 for further comprising: storing, at said server system, said service response in association with a Web address of said Web page; and said providing operation to access said service response associated with said Web address so that said service response is installed in said second code module.

24. A method as claimed in claim 20 wherein said service response is one of a demand service indication, a conditional service indication, and a push-related service.

25. A method as claimed in claim 20 further comprising: processing said service response at said processor platform in response to said initiating operation.

26. A method as claimed in claim 25 further comprising: terminating said processing operation upon execution of said server system, of a condition service response received from said processor platform.

27. A method as claimed in claim 26 wherein said service response is a multiple, and said method further comprises the steps of: displaying said metadata in association with said Web page on said processor platform.

28. A method as claimed in claim 27 further comprising: displaying said metadata from said Web page; and displaying said metadata disassociated from said Web page on said processor platform.

29. A method as claimed in claim 20 wherein said second code module includes a Web address for a second Web page, and said method further comprises:

downloading information content from said second Web page at said processor platform in response to said execution of said second code module; and processing said information content at said service response at said processor platform.
