

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

GOOGLE LLC,

Petitioner,

v.

BRODTI INC.,

Patent Owner.

Case No. IPR2025-00472

U.S. Patent No. 11,416,898

DECLARATION OF HARLEY MYLER, PH.D., P.E.

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I, Harley R. Myler, declare as follows:

1. My name is Harley R. Myler. I am presently an Emeritus Professor in the Department of Electrical & Computer Engineering at Lamar University and have over 45 years of experience in Internet-based technologies, including world-wide web interfaces, web-based media, including the design, processing, and transmission of image and video content, and telecommunications engineering involving data communications, network infrastructure, and signal transmission systems that support global Internet connectivity.

2. I have prepared this report as an expert witness retained by BrodTi, Inc. In this report, I give my opinions as to whether the claims of U.S. Patent No. 11,416,898 (*“the ’898 patent”*) are valid.

3. This report contains statements of my opinions formed to date and the technical bases and reasons for those opinions. I reserve the right to supplement my opinions in the future to respond to any arguments raised by the Petitioner (Google LLC) and to take account of any new information that becomes available to me.

I. BACKGROUND AND QUALIFICATIONS

4. In this section, I summarize my educational background, career history, publications, and other relevant qualifications. My full curriculum vitae is attached as Appendix 1 to this declaration.

5. I am presently a professor and the former Chair of the Electrical Engineering Department at Lamar University, which became Electrical & Computer Engineering in 2023, where I am the inaugural holder of the William B. and Mary G. Mitchel Endowed Chair in Telecommunications. I have held this position since August 2001.¹

6. I received a B.S. in Chemistry and Electrical Engineering from the Virginia Military Institute in 1975. I received M.S. and Ph.D. degrees in Electrical Engineering from New Mexico State University (NMSU) in 1981 and 1985, respectively. My Ph.D. training was in digital signal processing and, more specifically, communications and control. During my graduate studies at NMSU, the work on my doctorate was performed at the Physical Sciences Laboratory in a government classified area known as the NMSU Image Processing Laboratory. This lab was equipped with one of the first disk drives (1983) to enable digital video processing and my dissertation involved an imaging tracker that utilized this technology. Therefore, my experience with digital media and video spans over forty years.

7. I have vast experience in digital systems engineering, network and internent communications, and user interfaces in areas that include research, teaching, product design, and technical analysis. My industry experience includes

¹ <https://www.lamar.edu/engineering/electrical/faculty-and-staff/myler/index.html>

working as a Digital Systems Engineer at General Instrument Corporation, as a Digital Systems Engineer at Space Communications Company, and as a Staff Engineer at Martin Marietta Orlando Aerospace (now Lockheed Martin). I was also the President and Chief Engineer at I-Math Associates, where I supervised projects involving image and video processing for military applications. My work at Martin Marietta and at I-Math Associates involved digital video algorithm development in connection with contracts for the US Government. I have also consulted for the following companies: The Center for Occupational Research and Development (Waco, TX); Frontier Technologies, Inc. (Orlando, FL); The American Academy of Ophthalmology (San Francisco, CA); McDonnell-Douglas Aerospace Co. (St. Louis, MO); Martin-Marietta Orlando Aerospace n/k/a Lockheed Martin (Orlando, FL and Denver, CO); Autonomous Technologies, Inc. (Orlando, FL); National Instruments (Austin, TX); Analog Devices (Norwood, MA); and Quantronix, Inc. (Farmington, UT) for projects involving digital systems engineering, network and internet communications, and user interfaces.

8. My academic experience includes the following positions at the University of Central Florida: Assistant Professor of Electrical Engineering (September 1986–August 1991); Associate Professor of Electrical Engineering (September 1991–August 1997); and Professor of Electrical Engineering (September 1997–August 2001). I have taught many courses involving network

and internet communications and user interfaces. I have also taught graduate level courses in digital telecommunications and image processing. These courses have included topical units such as video and audio compression schemes, e.g., MPEG, decoding schemes, e.g., Viterbi, and HDTV/ATSC modulation methods, e.g., 8-VSB.

9. I am the author or co-author of numerous peer-reviewed publications relating to signal processing, image processing, digital systems, digital telecommunications, and various user interfaces. Among them, 'The Convergence of IPTV and HTPC,' published in *Delivering the Promise of IPTV* by the International Engineering Consortium in 2006, exemplifies my background in Internet and web-based technologies.

10. I am a Senior Life Member of the Institute of Electrical and Electronics Engineers (IEEE) and served as the Chair of the Beaumont Section from 2002 to 2006 and East Area Chair of Region V from 2006 to 2007. I am also a member of the Video Quality Experts Group (VQEG), an organization similar to JPEG and MPEG.

11. I am also a registered Professional Engineer in electrical engineering in the states of Texas (Lic. #94458) and Florida (Lic. #94001152) and have taught professional development courses emphasizing the use of standards in engineering practice. Digital media compression standards, such as the MPEG standard suite,

are critical to efficient content delivery across Internet and web-based platforms, enabling the reliable streaming and distribution of audio and video media worldwide.

12. Several of my publications, presentations, doctoral dissertations, and master's theses supervised are related to digital media processing, networking, and user interfaces. For example, several have addressed video compression, image analysis, and signal transmission relevant to Internet and web-based media delivery systems, including IPTV, streaming protocols, real-time digital communication architectures, and the underlying networking and user interfaces to enable the foregoing.

13. Additional details about my employment history, fields of expertise, and publications are included in my curriculum vitae included herewith as Appendix 1.

II. MATERIALS AND OTHER INFORMATION CONSIDERED

14. I have considered information from various sources in forming my opinions. I have reviewed and considered each of the exhibits listed in the attached Appendix 2 (Appendix of Exhibits), and any other documents mentioned herein, in forming my opinions.

III. UNDERSTANDING OF THE LAW

15. I am not an attorney. In forming my opinions in this Declaration, I applied the relevant legal principles provided to me by counsel, which are summarized in Appendix 4.

IV. THE '898 PATENT

A. The '898 Patent

1. General Information

16. I understand that the '898 patent issued on August 16, 2022 from Application No. 16/422,106 filed on May 24, 2019. EX1001 (*'898 Patent*), cover page. The sole named inventor is John E. DeTitta.

2. The '898 Patent Is Related To A Method For Funding A Project

17. A POSITA would have understood the '898 Patent to be related to a method for funding a project because the '898 Patent repeatedly states that to be its purpose. *See* EX1001 (*'898 Patent*), Title (“Methods, systems, and apparatus for financing projects”), Abstract (“A method of producing and financing a predetermined project is disclosed.”), 1:22-30 (“The present invention relates generally to media financing and more specifically it relates to such a process that allows advertisers to finance media productions through advertising media buys while eliminating the risk of normal event financing speculative investment.”), 1:34-2:28 (“Due to the above described limitations of existing fund raising

methodologies, there remains a need for an improved method, system and apparatus for raising funds for projects.”), and 2:30-3:4 (“It is an object of the present invention to provide a project funding method, system and apparatus that will overcome the shortcomings of current methodologies, systems and systems.” and “It is a further object of the present invention to provide a process for raising funds for a predetermined project which utilizes an advertiser funding model which eliminates the requirement for traditional fund raising systems...”)

3. The '898 Patent Provides A Specific Exemplary Embodiment Of Its Method For Funding A Project

18. Beyond repeatedly stating that it is related to project funding, the '898 Patent provides a specific example of its project funding methodology. EX1001 (*'898 Patent*), FIG. 2 (reproduced below), 4:30-5:49.

19. The first step of the project funding process of the '898 Patent is shown in step 51 of its FIG. 2, where a creative process is performed such that an idea (*e.g.*, a movie screenplay) is formed and a budget to bring it to fruition (*e.g.*, as a movie) is developed. EX1001 (*'898 Patent*), 4:35-49, FIG. 2.

20. Next, in step 56, the company that owns or licenses the creative project evaluates the idea and determines its target market. The company then creates a media property (*e.g.*, a website) with content (*e.g.*, a preview video for the project) and a description of the relevant target audience. EX1001 (*'898 Patent*), 4:50-5:5, FIG. 2.

21. Once the media property and content is set up (e.g., on a website), a number of impressions for the media property may be tracked by the company that owns or licenses the creative project. The '898 Patent indicates that “an impression is a visitor to the website through access to the World Wide Web that visits a screen of the media property.” EX1001 ('898 Patent), 5:17-21, FIG. 2.

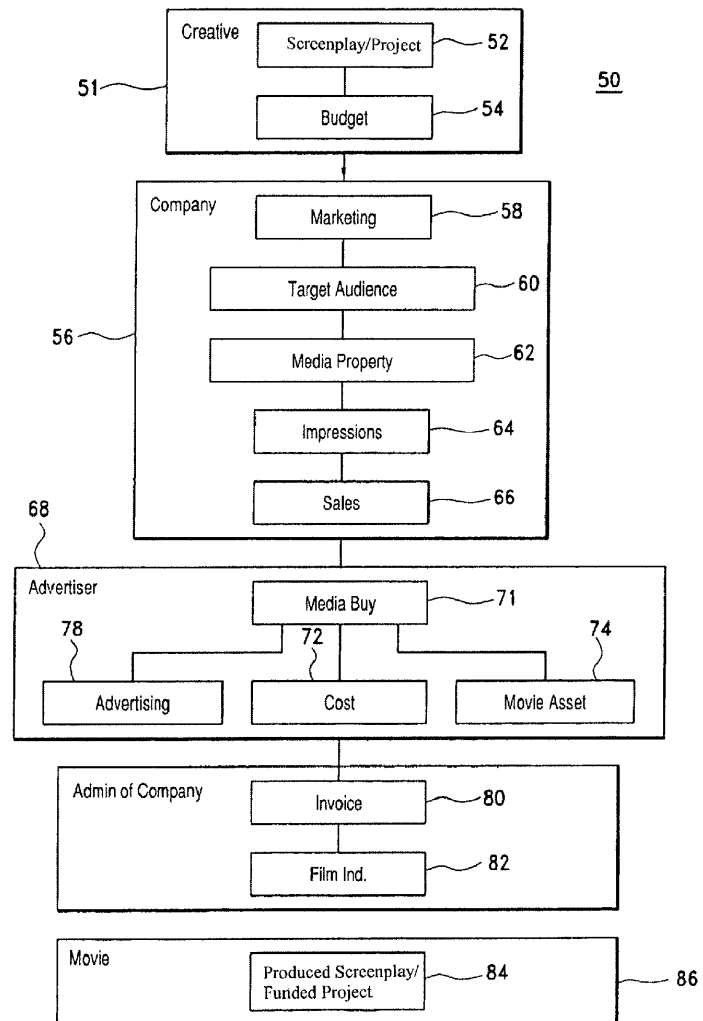


FIG. 2

22. A POSITA would have understood setting up the media property (and content) in this manner would allow the company that owns or licenses the creative project to measure the popularity of the media property (and content) by measuring the number of impressions, which then allows the company to make advertising / media buy offers to advertisers.

23. Indeed, the '898 patent indicates that the company may use the gathered impression information (and target audience information) to sell

advertising space within its content. EX1001 ('898 *Patent*), 5:5-9 (“These impressions create a commodity in the advertising community and are packaged by the sales team to be sold in step 66 to an advertiser.”), FIG. 2.

24. This sales process from the company to advertisers is described in more detail at EX1001 ('898 *Patent*), 6:11-30 (emphasis added):

Each of these impressions has a value to them based on the audience and the value to the advertiser. Once a media property is created and visitors come to the media property site and there is a sufficient number of impressions to market the users to advertisers.

On the internet, the impression cost is based on guaranteeing/providing to the user on per thousand impressions or CPM. The average cost to the advertiser is 15\$ per thousand impressions. ***A sales team of the company then markets the impressions on the website to the advertiser for a set number of impressions and cost in a media buy. A media buy sets the terms and cost of the advertising provided by the media property to the advertiser.***

The media production finance process 50 then sells sufficient advertising to advertisers on the media property to obtain enough revenue for the cost of the budget provided by the producer. If the advertiser receives a standard media buy however, the funds generated from the media buy is placed into the media production fund that subsequently financed the media production.

25. It is clear from the foregoing that it is the company that owns or licenses the creative project that offers to the advertiser a “set number of impressions and cost in a media buy” in combination as a set package (*e.g.*, X impressions at Y CPM) to directly fund the project.

26. A POSITA would have understood this offer methodology (*e.g.*, ***from*** the company and ***to*** the advertiser) to make sense inasmuch as the purpose of the ’198 patent’s process is fundraising for the company, not just to offer an advertisement buy interface for an advertiser. As such, the company is seeking to create a guaranteed revenue stream from the media buy, not just to be a facilitator of advertising buys.

27. Next, in step 68, an advertiser (a separate entity from the company) reviews the “predetermined media buy” (*i.e.*, the offer of impressions and cost) offer from the company, determines the overall cost to the advertiser based on the offer, and creates the advertising that will be placed into the media project (and content). EX1001 (’898 *Patent*), 5:22-37.

28. Finally, the media buy is fulfilled (*e.g.*, the advertisements are placed in the media project (and content) and the advertiser pays the company for the advertisement placement. EX1001 (’898 *Patent*), 5:38-49.

29. Dr. Crovella's² analysis of the specification of the '898 Patent skips over large parts of the foregoing processes. See EX1002 (Crovella Dec.), ¶¶9-14. And I note that Dr. Crovella would not confirm during his deposition whether he construed the claims to cover the exemplary embodiments of the '898 Patent. EX2004 (*Crovella Trans.*), 22:19-24:13.

4. The '898 Patent Provides A Specific Exemplary Embodiment Of Its Method For Valid Impression Counting

30. The '898 Patent also describes how it tracks impressions at EX1001 (*'898 Patent*), 5:9-16 and 5:59-6:10.

Ad Impression is defined by the Internet advertising bureau as the standard in internet advertising as a measurement of responses from an ad delivery system to an ad request from the user's browser 14, which is filtered from robotic activity and is recorded at a point as late as possible in the process of delivery of the advertising materials to the user's browser-therefore the closest to actual opportunity to see by the user.

A valid impression may only be counted when an ad counter receives and responds to an HTTP request for a tracking asset from a client. The count must happen after the initiation of retrieval of underlying page content. Permissible implementation techniques include (but are

² When I mention Dr. Crovella herein, I also mean Petitioner unless I note otherwise, as they appear to advance identical obviousness arguments.

not limited to) HTTP request generated by , <FRAME>, or <SCRIPT SRC>. For client-side ad serving, the ad content itself could be treated as the tracking asset and the ad server itself could do the ad counting.

The response by the ad counter includes but is not limited to: Delivery of a “beacon”, which may be defined as any piece of content designation as a tracking asset. Beacons commonly are in the form of 1×1 pixel image. Delivery of a “302” redirector or html/JavaScript (which doubles as a tracking asset) to any location, and delivery of ad content.

Measurement of any ad delivery may be accomplished by measuring the delivery of a tracking asset associated with the ad. The ad counter must employ standard header on the response, in order to minimize the potential of caching.

31. Thus, it is clear in the context of the '898 Patent that impressions are measured based on the delivery of a webpage to a client, not just the client accessing a particular website or connecting to a particular web server.

32. Dr. Crovella confirmed that webpages must be at least partially transmitted to a client for impressions to be recorded. EX2004 (*Crovella Trans.*), 53:21-55:1. I agree that a POSITA would have understood this to be the way impressions are gathered in the context of the '898 Patent.

5. Invention/Filing Date of the Challenged Claims

33. It is my understanding that determining the invention or filing date of the claims of the '898 Patent affects the universe of prior art that is available against those claims.

34. The '898 Patent was filed on May 24, 2019 and indicates that it is a continuation of U.S. application Ser. No. 14/015,604, filed Aug. 30, 2013, which is a continuation-in-part of U.S. application Ser. No. 11/274,706, filed Nov. 14, 2005, which claims the benefit of priority to U.S. Provisional Application No. 60/626,933, filed Nov. 12, 2004. EX1001 (*'898 Patent*), cover page, 1:7-18.

35. As set forth in Appendix 4, it is my understanding that the claims of the '898 Patent could be entitled to one of these earlier dates (*e.g.*, the August 20, 2013, November 14, 2005, or November 12, 2004 dates of the applications identified above) as their date of invention or filing date (rather than the 2019 filing date of the '898 Patent). To utilize one of the earlier dates, it is my understanding that the claim of the '898 Patent must find support in the related earlier filing.

36. Dr. Crovella does not analyze whether the claims of the '898 Patent are entitled to any one of the earlier dates. Rather, he assumes for the purposes of his Declaration that the claims of the '898 Patent may rely on the November 12,

2004 filing date of U.S. Provisional Application No. 60/626,933 as their date of invention, and states that:

I express no opinion on whether the '898 patent is actually entitled to the benefit of the November 12, 2004 provisional application to which it claims priority (60/626,933). This issue is not relevant here because all of the prior art references relied upon predate that date. In the event entitlement to the provisional filing date may later become relevant, for example based on arguments later presented by Patent Owner, I reserve my right to provide opinions on that issue at that time.

EX1002 (*Crovella Dec.*), p. 11, fn 1.

37. Because the art applied by Dr. Crovella does appear to predate the November 12, 2004 filing date of U.S. Provisional Application No. 60/626,933, I agree that the invention or filing date issue does not appear to be relevant to the issues here.

38. I have not been asked to identify the date of invention and/or filing date attributable to the claims of the '898 Patent. I reserve my right to do so in the future to the extent those issues become relevant.

6. Prosecution History

39. I have reviewed the prosecution history of the '898 Patent. EX2002 (*Pros. His.*). The '898 Patent's Application was filed on May 24, 2019. EX2002 (*Pros. His.*), 172-209. The issued claims of the '898 Patent originated from a May 28, 2020 Preliminary Amendment. EX2002 (*Pros. His.*), 159-166. These claims

were found substantively allowable in a March 8, 2022 first Office Action by the Patent Office. EX2002 (*Pros. His.*), 88-96. The claims were ultimately allowed in a July 5, 2022 Notice of Allowance. EX2002 (*Pros. His.*), 44-52.

40. In the March 8, 2022 first Office Action, the Examiner stated that: “The present invention relates generally to media financing and more specifically it relates to such a process that allows advertisers to finance media productions through advertising media buys while eliminating the risk of normal event financing speculative investment.” EX2002 (*Pros. His.*), 92. This observation by the Examiner confirms that a POSITA would have understood the ’898 Patent to be related to a method for funding a project, as I point out above in §IV.2. Further supporting this conclusion, the references identified by the Examiner in the Office Action and Notice of Allowance as the closest prior art were each fundraising-related, providing further confirmation for how a POSITA would have understood the ’898 Patent.

41. Dr. Crovella did not indicate that he reviewed the prosecution history of the ’898 Patent as part of his obviousness analysis. EX1002 (Crovella Dec.), ¶8.

42. I have also reviewed the prosecution history of the ’898 Patent’s immediate predecessor, U.S. Patent No. 10,325,290. EX2003 (*’290 Patent Pros. His.*). This Application, which advances similar claims to those at issue here, was

allowed on April 29, 2019 over a patentable subject matter rejection. EX2003 (*'290 Patent Pros. His.*), 23-31.

V. LEVEL OF ORDINARY SKILL IN THE ART

43. I have been asked to provide my opinion on the characteristics of a person having ordinary skill in the art of the '898 Patent at the time of the claimed invention (a "POSITA").

44. As noted above, Dr. Crovella has assumed for the purposes of his Declaration that the claims of the '898 Patent may rely on the November 12, 2004 filing date of U.S. Provisional Application No. 60/626,933 as their invention or filing date. As such, he has also used the November 12, 2004 as the measurement point for analyzing a POSITA's knowledge and motivation.

45. For purposes of this Declaration (and matter), I will also utilize the 2004 timeframe for my consideration of a POSITA's characteristics. To the extent one of the later dates identified in §IV.A.5 is determined as the appropriate filing or invention date for one or more of the Challenged Claims (*e.g.*, the 2005, 2013, or 2019 dates), I reserve my right to revise my opinion. I do not believe, however, adjusting the relevant date to the 2005, 2013, or 2019 dates would affect my ultimate conclusions herein.

46. To determine a POSITA's characteristics, I considered several things, including various prior art techniques relating to internet-based technologies,

including web interfaces and web-based media, the types of problems that such technology gave rise to, and the rapidity with which innovations were made. I also considered the sophistication of the technologies involved, and the educational background and experience of those actively working in the field at the time. I also considered the level of education that would have been necessary to understand the '898 Patent. Finally, I placed myself back in the relevant period of time and considered the colleagues, research associates, and students that I have worked with and supervised in the field of internet-based technologies, including web interfaces and web-based media.

47. I came to the conclusion that a POSITA in the field of art of the '898 patent would have had at least a bachelor's degree, or the equivalent degree, in electrical engineering, computer science, computer engineering, or a related field, and at least two years of experience in internet-based technologies, including web interfaces and web-based media, or a related field, and with related systems, hardware, software, and firmware, or equivalent experience. A person with less education but more relevant practical experience, or more education and less experience, may also meet this standard.

48. In the timeframe of the invention of the '898 Patent, and in view of the types of problems encountered in the art and prior art solutions to those problems, a POSITA would have known and had the skills necessary to design,

implement, and/or utilize computer and networking systems, HTML, impression tracking technology, user interface devices (*e.g.*, personal computers, PDAs, smart phones, *etc.*), online gateways, routers, modems, *etc.*, Internet Protocols, dynamic host configuration protocol (DHCP), network address translation (NAT) and local area networks (LAN) (wired and wireless), and wide area networks (such as the Internet).

49. I believe that I am at least a POSITA and, furthermore, I have supervised those who were also POSITAs. Moreover, I qualified as a POSITA as of 2004. Accordingly, I believe that I am qualified to opine from the perspective of a POSITA regarding the challenged claims.

50. For purposes of this Declaration, unless otherwise noted, my opinions and statements, such as those regarding the understanding of a POSITA (and specifically related to the references I consulted herein), reflect the knowledge that existed in the art as of the time of the invention of the '898 Patent.

VI. CLAIM CONSTRUCTION

A. The Claim Terms Have Their Plain and Ordinary Meaning

51. For purposes of this Declaration, I have considered the claim language, specification, and prosecution history of the '898 Patent to determine the meaning of the claim language as it would have been understood by a POSITA at the time of the invention.

52. As set forth in more detail in Appendix 4, I understand that claim terms should be given their “plain and ordinary meaning” in view of the specification from the viewpoint of a POSITA. Unless otherwise stated in this section or elsewhere in this Declaration, I have applied the plain and ordinary meaning to all claim terms.

53. Dr. Crovella asserts that he has construed the terms of the claims to have their plain and ordinary meaning and does not believe any express claim constructions are necessary to consider the Grounds. EX1002, ¶¶20-21.

54. I generally agree that the terms of the challenged claims have their plain and ordinary meaning and that no express constructions are necessary to consider the Grounds.

B. Dr. Crovella’s Interpretation Of “Wherein The Populating Comprises Placing The Advertising Material Within Web Property Content Of The At Least One Website” Is Wrong

55. I disagree, however, that Dr. Crovella applied the “plain and ordinary meaning” to the phrase “wherein the populating comprises placing the advertising material within web property content of the at least one website” in claim element [f],³ and/or its constituent terms, as part of his analysis.

56. As set forth below in Section VII.B, element [f] recites

³ For convenience, I adopt Dr. Crovella’s claim element identification scheme herein.

[f] based on obtaining the selection, populating, by the one or more processors, the advertising material on the at least one website, wherein the populating comprises *placing the advertising material within web property content of the at least one website*;

EX1001 ('898 Patent), claim 1.

57. A POSITA would have understood this phrase in the context of the '898 Patent as a whole to require: (i) inserting an advertisement: (ii) into the particular content (*e.g.*, a discrete user-accessible file) for which revenue is being sought; (iii) where the content is presented on a website (*e.g.*, on a particular webpage or webpages of a common domain). This conclusion results from the following understandings of the constituent terms of this phrase.⁴

58. First, as for “web property content,” this term appears three times in claim 1 (claims 10 and 19 are similar), reproduced partially below with highlights (and added element letters).

1. A computer-implemented method comprising:

...

[f] based on obtaining the selection, populating, by the one or more processors, the advertising material on the at least one website, wherein the populating comprises placing the advertising material within *web property content* of the at least one website;

⁴ To the extent this understanding (and of the constituent terms) is considered an express construction, I adopt it.

[g] monitoring, by the one or more processors, a number of impressions of the advertising material provided to users accessing the *web property content* displayed on the at least one website;

...

[k] based on determining a number of valid impressions are met, electronically collecting, by the one or more processors, a share of the advertising revenue to be transmitted to the *web property content* owner.

59. In the context of these three recitations, “web property content” must be: (i) capable of being placed on a website (see below for the meaning of website); (ii) capable of being accessible to a user on the website; and (iii) the thing for which revenue is being sought.

60. Further, as set forth in §IV.A.2-3, a POSITA would have understood that the point of the ’898 Patent is to raise funds in relation to particular “content.” In this context, a POSITA reviewing the specification’s exemplary embodiment would have understood the “content” for which revenue is being sought to be a discrete user-accessible file that is arranged on a webpage for which impressions can be tracked and then used to offer media buy opportunity offers to an advertiser for ad placement within the content. EX1001 (’898 Patent), FIG. 2, 4:30-5:49.

61. Based on the foregoing, a POSITA would have understood “web property content” to mean a discrete user-accessible file on a website for which revenue is being sought.

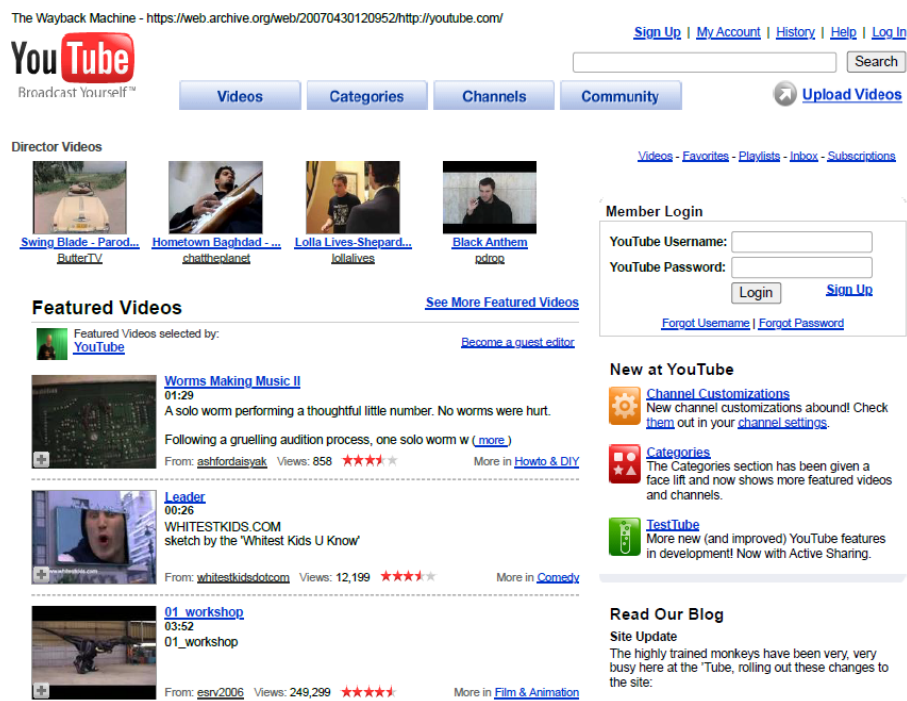
62. In the context of the '898 Patent, “content” cannot be, as Dr. Crovella suggests in his analysis of element [f]⁵ (*see* EX1002, ¶¶125-128)⁶, a webpage or website generally. “Content” is specified by claim 1 (and claims 10 and 19) to be capable of (among other things) being placed *on a website* and being *accessible to a user on the website*. Thus, “content” and “website” must logically be different things in the context of the '898 Patent. Supporting this conclusion, it is also my understanding that different terms in patent claims should be interpreted to have different meanings.

63. Second, as for “placing the advertising material within web property content,” a POSITA would have understood this phrase to mean inserting the advertisement into content (with content having the meaning set forth above). A POSITA would have understood this phrase in this manner because it is impressions of the *content* that matter for fundraising in the '898 Patent. EX1001 ('898 Patent), 4:30-5:49);, and element [g], reciting that it is impressions of users “accessing the web property content displayed on the at least one website” that is monitored.

⁵ As set forth below in §VII.B, Dr. Crovella’s positions as to element [f] are not entirely clear.

⁶ *See also* EX2004 (*Crovella Trans.*), 25:11-15 (agreeing that content in his view can be a webpage or files on the webpage).

64. Indeed, impressions must be content-based because a webpage could include multiple different pieces of content. An example of this is illustrated by the following page from www.youtube.com, circa 2007, which I obtained from the Internet Archive, which shows examples of multiple content items on a website in the relevant time frame, a concept which was well known to a POSITA.



EX2006.

65. I also understand that Patent Owner has previously explained the foregoing plain meaning of this phrase during briefing on a Motion to Dismiss in the related district court matter between the parties. *See* EX2005 (*BrodTi's Answering Brief*), pp. 1, 3-4, 7, 13-14. It is my understanding that this briefing occurred before Dr. Crovella's Declaration was prepared, but it does not appear that Dr. Crovella was provided or considered this briefing. EX2004 (*Crovella*

Trans.), 13:7-10; EX1002 (*Crovella Dec.*), ¶8 (listing of references considered, omitting this document).

66. Third, as for “website,” this term has been used in slightly varying ways in the art over the years. Thus, a POSITA would have reviewed the ’898 Patent to understand how it was being used therein. Starting with the claims, “website” is used in claim 1 (claims 10 and 19 are similar), as set forth below:

1. A computer-implemented method comprising:

[a] receiving, by one or more processors, from a given client, over an Internet-based communication link from a browsing application executed on the given client processor to the one or more processors, a message comprising data, the data comprising advertising material to populate on one or more *websites*;

...

[d] obtaining, by the one or more processors, via an input in the graphical user interface, a selection of one or more of the advertising buy options, wherein the selected one or more advertising buy options comprise at least one *website* of the respective *websites* and a predetermined number of impressions of the advertising material for users visiting the at least one *website*;

...

[f] based on obtaining the selection, populating, by the one or more processors, the advertising material on the at least one *website*, wherein the populating comprises placing the advertising material within web property content of the at least one *website*;

[g] monitoring, by the one or more processors, a number of impressions of the advertising material provided to users accessing the web property content displayed on the at least one *website*;

...

[j] upon determining a number of valid impressions are met, ceasing, by the one or more processors, the populating of the advertising material on the at least one *website*; and

...

67. Read together, the elements in which “website” is present in claim 1 require that websites have to at least: (i) allow advertisements to be populated on them; (ii) contain options that are selectable by a client as part of the ad buy process; (iii) be visitable by a user; and (iv) have web property content displayed on them.

68. To provide these features, a POSITA would have understood “website” was being used to describe a particular definable webpage (*e.g.*, www.espn.com) or a group of webpages at a particular domain (*e.g.*, www.espn.com, www.espn.com/nba, www.espn.com/nfl, www.espn.com/nhl). This usage permits the functionality set forth in the claim elements above.

69. “Website” is used similarly in the ’898 Patent’s specification. *See* EX1001 (’898 Patent), 5:17-19 (“an impression is a visitor to the *website* through access to the World Wide Web that visits a screen of the media property”), 6:19-21 (“A sales team of the company then markets the impressions on the *website* to the

advertiser”), and 6:43-45 (“A media outlet may include but is not limited to film, Television, Print, Internet (and a corresponding *web site*)”) (emphases added).

70. The prior art cited by Dr. Crovella teaches the same. *See* EX1003 (*Nicholas*) ¶¶[0056] (“One example might be viewing the cnn.com *website* using a web browser on personal computer 123 (FIG. 1)”), [0123] (“A company might be given preferential placement on an individual site or category of sites, such as the Green Bay Packers *website*, www.packers.com.”), EX1006 (*Yasnovksy*), [0035] (“In one specific embodiment, the network 120 is the Internet. The sites 110 include *web sites*, such as Yahoo!'s various properties: the Yahoo! Main Page, Launch!, News, Finance, etc.”), EX1015 (*Manowitz*), par. bridging pp. 1-2 (“The publisher then publishes the content, for example, on a *web site*, for access by a consumer”).

71. The above meaning of “website” (“a particular definable webpage (*e.g.*, www.espn.com) or a group of webpages at a particular domain (*e.g.*, www.espn.com/nba, www.espn.com/nfl, www.espn.com/nhl)” reflects each of these usages of website.

72. I note that the scope of “website” as used in the art can include, in some instances, the server that hosts the “website.” This usage is also mentioned in passing in the ’898 Patent’s specification. *See* EX1001 (’898 *Patent*) 3:66-4:4 (“The WWW service allows a server computer system (*i.e.*, Web server or Web

site) to send graphical Web pages or screens of information such as the advertising materials to a remote client computer system 10. The remote client computer system 10 can then display the Web pages.”).

73. But this usage does not comport with “website” as it appears in the context of claim 1 (or claims 10 and 19), because a server cannot itself: (i) allow advertisements to be populated *on it*; (ii) *show options* that are selectable by a client as part of the ad buy process; (iii) *be visitable* by a user; and (iv) *have web property content displayed on them*. Instead, as noted in the foregoing passage, a server would provide a web page or a group of web pages for those functions. For these same reasons, “website” cannot be, as Dr. Crovella suggests in his analysis of element [f], a server “node.”.

VII. THE ASSERTED OBVIOUSNESS GROUNDS

74. I understand that Petitioner has advanced the following Grounds alleging claims 1-20 of the '898 Patent (the “Challenged Claims”) are obvious:

Ground	Claims	Alleged Combination
1	1-6, 9-15, 18, 19	<i>Nicholas</i> (EX1003), <i>Laidlaw</i> (EX1004), <i>Mayadas</i> (EX1005), and <i>Error</i> (EX1007).
2	7, 8, 16, 17, 20	Ground 1 Prior Art + <i>Yasnovsky</i> (EX1006)
3	1-6, 9-15, 18, 19	Ground 1 Prior Art + <i>Manowitz</i> (EX1015)
4	7, 8, 16, 17, 20	Ground 2 Prior Art + <i>Manowitz</i> (EX1015)

75. I understand that a patent claim is obvious when the differences between the claimed invention and the prior art taken as a whole would have been obvious to a POSITA at the time of the invention. My understanding of the standards applicable to the obviousness analysis are set forth in more detail in Appendix 4.

76. In my opinion, a POSITA would *not* have found the Challenged Claims of the '898 patent to be obvious based on the Grounds advanced by Dr. Crovella for at least the following reasons.

A. Claim Elements [c] and [d] Are Not Taught or Suggested by the Ground References

77. Elements [c] and [d] in independent claims 1, 10, and 19 recite the following:

[c] based on a message provided by a given client, generating, by the one or more processors, a webpage, wherein the generating comprises providing, via a graphical user interface of the webpage, a plurality of advertising buy options for selection by a given client accessing said webpage;

[d] obtaining, by the one or more processors, via an input in the graphical user interface, a selection of one or more of the advertising buy options, wherein the selected one or more advertising buy options comprise at least one website of the respective websites and a predetermined number of impressions of the advertising material for users visiting the at least one website;

78. These elements, read in conjunction, first require the generation of a webpage *presenting advertising buy options to a client for the client's selection*. This is what is required by the plain language of element [c], as the advertising buy options have to be presented *to a client* in order for the options to be selected *by the client* in element [d]. This understanding also reflects the media buy process described by the '898 Patent's specification as being marketed from the company *to the advertiser*. EX1001 ('898 Patent), 6:16-23. ("A sales team of the company then markets the impressions on the website to the advertiser for a set number of impressions and cost in a media buy. A media buy sets the terms and cost of the advertising provided by the media property to the advertiser.").

79. Second, these elements require obtaining the client "selection" of the "advertising buy options" that have been presented to it (in element [c]) where the selected buy options include "at least one website of the respective websites and a predetermined number of impressions of the advertising material for users visiting the at least one website." To allow the client to provide such selections, a POSITA would have understood these elements to require that the "advertising buy options" presented in element [c] must include selectable options of "at least one website" and a "predetermined number of impressions" from which the client can "select."⁷

⁷ This reflects the ordinary meanings of "select," "option," and "predetermined." EX2007, EX2008.

For example, the “advertising buy options” could include a list of websites (*e.g.*, www.espn.com, www.foxsports.com, www.nbcsports.com, *etc.* from which a particular website can be selected) and a list of numbers of impressions (*e.g.*, 10,000, 100,000, 1,000,000, *etc.*) from which a particular number of impressions can be selected. The claim language also contemplates other options. The “advertising buy options” could also include a list of websites (*e.g.*, www.espn.com, www.foxsports.com, www.nbcsports.com, *etc.* from which a particular website can be selected) and single number of impressions option (*e.g.*, 10,000) that can be selected. Still further, the “advertising buy options” could also include options with single website and predetermined number of impression combinations. In any event, what is required is that the options are presented *to the client* for its selection.

80. Finally, the client may then “select” the presented options and the selection can be obtained by the system.

81. Regarding his Grounds 1/2, Dr. Crovella addresses these claim elements in pars. 102-110 of his Declaration. EX1002 (*Crovella Dec.*), ¶¶102-110. Dr. Crovella relies on *Nicholas* (EX1003) alone as allegedly teaching claim elements [c] and [d].

82. Regarding the providing of advertising buy options that include websites and the client’s selection of “at least one website of the respective

websites,” Dr. Crovella asserts that *Nicholas*’s teaching of the client’s selection of a website, such as “test.com” in its FIG. 9, teaches the provision of a list of websites from which a particular website can be selected. EX1002, ¶103.

83. I have provided below an annotated version of *Nicholas*’s FIG. 9 highlighting at least one of the portions upon which I understand Dr. Crovella relies.

FIG. 9

84. As for the providing options from which a particular number of impressions can be selected, Dr. Crovella asserts that the *client’s entry* of a number of impressions in a text entry box in FIG. 8 teaches the selection of a presented predetermined number of impressions. EX1002, ¶¶102, 109. These teachings are

all that Dr. Crovella relies on to support his opinion that this feature is obvious.

EX2004 (*Crovella Trans.*), 43:19-44:11.

85. I have provided below an annotated version of *Nicholas's* FIG. 8 highlighting the portion upon which I understand Dr. Crovella relies.

201

202

Dizpersion log off threshold

accounts advertiser website newspaper

Broadcast Ad Ad Upload Coupon Quantity Channels Geographic Demographic Summary

Company Name
User Name
Street Address
City, State Zip
Home

Steps

1. Enter the Number of Impressions Purchased.
2. Select the Broadcast Start Date.
3. Select the Broadcast Start Time and Time Zone.
4. Select the Broadcast End Date.
5. Select the Broadcast End Time and Time Zone.
6. Press Submit.

Impressions

Start Date

Month Day 2001

Start Time

1:00 AM

Start Zone

Eastern

End Date

Month Day 2001

End Time

1:00 AM

Time Zone

Eastern

Submit

2001 Dizpersion Corporation Contact Us Privacy Terms of Use

221

222

223

224

225

220

FIG. 8

86. I disagree with Dr. Crovella.

87. The textual entry of a number by a client is not the “selection ...” of “a predetermined number of impressions of the advertising material” required by element [d]. Entering a value is not selecting a displayed option. Nor is entering a value in real-time selecting a predetermined option. Dr. Crovella tries to sidestep this issue by changing the verb from that of the claim, asserting the *Nicholas* teaches allowing the advertiser to “specify” a number of impressions (EX1002

(*Crovella Dec.*), ¶102) and that the determination of the number to enter in the advertiser's mind makes that entry "predetermined" (EX1002 (*Crovella Dec.*), ¶109). But "specifying" is not selecting an option, and real-time entry is not an option predetermined by the system for the user's selection.

88. Moreover, the entry of a number of impressions convenient to the advertiser is *opposite* of how the '898 Patent works, as discussed above in §§IV.A.2-3. As set forth in §§IV.A.2-3, the '898 Patent is related to a situation where the company that owns or leases the content offers to an advertiser a number of impressions and cost per impression in order to complete its fundraising goals. It would not make sense in this context for the advertiser to be the one entering the number of impressions, as such an approach would offer little fundraising guarantees for the company.

89. As set forth above, Petitioner does not rely on any of the other references applied in Grounds 1/2 to teach this feature, and I see no teaching in any of *Laidlaw* (EX1004), *Mayadas* (EX1005), or *Error* (EX1007) that would provide the above-noted deficiencies of *Nicholas*. Thus, it is my opinion that elements [c] and [d] are patentable over Grounds 1/2.

90. Regarding Grounds 3/4, Dr. Crovella does not assert that the reference added by these grounds, *Manowitz* (EX1015), teaches these claim limitations, and I

see no teaching of them in *Manowitz*. See EX1002 (*Crovella Dec.*), ¶¶184-189.

Thus, elements [c] and [d] are also patentable over Grounds 3/4.

B. Claim Element [f] Is Not Taught or Suggested by the Ground References

91. Element [f] in independent claims 1, 10, and 19 recites the following:

[f] based on obtaining the selection, populating, by the one or more processors, the advertising material on the at least one website, wherein the populating comprises placing the advertising material within web property content of the at least one website;

92. As set forth in the claim construction section (§VI.B), a POSITA would have understood the “wherein ...” portion of this element to require: (i) inserting an advertisement: (ii) into the particular content (*e.g.*, a discrete user-accessible file) related to the fundraising is being sought; (iii) where the content is presented on a website (*e.g.*, on a particular webpage or webpages of a common domain). Moreover, this element requires that the website where the content is presented is the website selected in element [d].

93. Regarding Grounds 1/2, Dr. Crovella addresses this claim element in pars. 125-128, asserting that *Nicholas* alone allegedly teaches these features. EX1002, ¶¶125-128.

94. I disagree with Dr. Crovella’s analysis on several accounts.

95. First, Dr. Crovella alleges that *Nicholas*’s node 130 teaches “the at least one website” in this claim element, evidently because it provides HTML

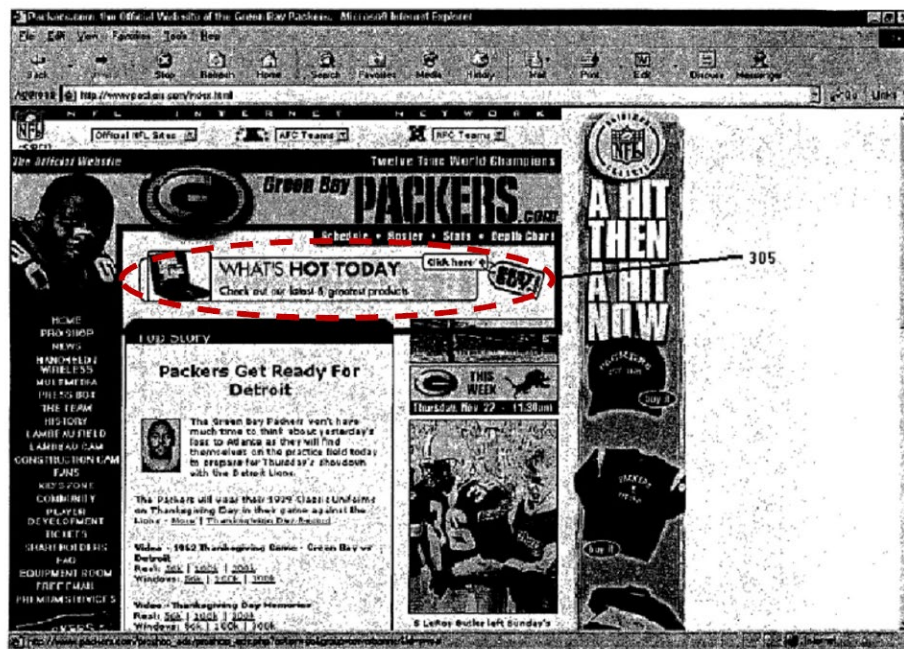
code. EX1002 (*Crovella Dec.*), ¶¶125-126. But node 130 is not a “website” in the context of the claims as it is not a webpage or set of webpages of a common domain. *See* §VI.B. A server node, by itself, cannot provide the functions required of a “website” by the elements of claim 1, and Dr. Crovella does not explain how it can.⁸

96. Second, even if node 130 could be considered a “website” in the context of claim 1 (it cannot), Dr. Crovella does not explain how *Nicholas* teaches that node 130 corresponds to the ***particular website*** selected by the advertiser in element [1d] as required by this claim element (*i.e.*, “populating ... the advertising material on ***the at least one website***” of this element refers back to element [1d]’s “the selected one or more advertising buy options comprise ***at least one website*** of the respective websites”). Indeed, Dr. Crovella appears to ignore this requirement of element [f], focusing instead on generalizations regarding the “based on obtaining the selection” language. *See* EX1002 (*Crovella Dec.*), ¶¶127-128. But these generalizations do not provide any explanation for how node 130 is tied to any website selected in, for example, FIG. 9 of *Nicholas*.

97. Third, Dr. Crovella does not show how *Nicholas* teaches an advertisement is populated “within web property content.” In par. 126 of his

⁸ Node 130 is the only portion of *Nicholas* upon which Dr. Crovella relies on to teach the website of this claim element. EX2004 (*Crovella Trans.*), 58:1-6.

Declaration (EX1002), Dr. Crovella points only to an advertisement presented on a webpage in FIG. 3 of a provisional application related to *Nicholas* as teaching this element. EX1002 (*Crovella Dec.*), ¶126. I have reproduced the figure from Dr. Crovella's Declaration below with annotations identifying the advertisement identified by Dr. Crovella.⁹



98. But FIG. 3 does not teach an advertisement placed “within web property content of the at least one website” as required by claim element [f], as “web property content” is properly understood. *See* §VI.B. While the advertisement in this figure is placed on a website (as website is properly

⁹ *See also* EX2004 (*Crovella Trans.*), 58:7-59:22.

understood)¹⁰, it is not placed within content (e.g., a discrete user-accessible file) on the website.

99. As set forth above, Petitioner does not rely on any of the other references applied in Grounds 1/2 to teach this feature, and I see no teaching in any of *Laidlaw* (EX1004), *Mayadas* (EX1005), or *Error* (EX1007) that would provide the above-noted deficiencies of *Nicholas*. Thus, element [f] is patentable over Grounds 1/2.

100. In Grounds 3/4, Dr. Crovella doesn't explain how *Manowitz* would correct the above-identified deficiencies of *Nicholas*, and doesn't rely on it to teach that advertisements would be presented "within" the content on the selected website. EX1002 (*Crovella Dec.*), ¶¶184-189. Nor do I see any teaching of the above-identified deficiencies in *Manowitz*. Thus, element [f] is patentable over Grounds 3/4.

C. Claim Elements [g] and [h] Are Not Taught or Suggested by the Ground References

101. Elements [g] and [h] in independent claims 1, 10, and 19 recite the following:

¹⁰ Indeed, even the portion of *Nicholas*'s priority document Dr. Crovella cites as describing FIG. 3 specifies that it is a "web site." EX1002 (*Crovella Dec.*), ¶126 (last three lines).

[g] monitoring, by the one or more processors, a number of impressions of the advertising material provided to users accessing the web property content displayed on the at least one website;

[h] determining, by the one or more processors, whether an impression of the advertising material is valid, wherein the impression is valid based on a predetermined impression tracking system;

102. Regarding Grounds 1/2, Dr. Crovella addresses these elements in pars. 129-139. EX1002, ¶¶129-139. Dr. Crovella asserts that *Nicholas* alone teaches element [g] and that the combination of *Nicholas* and *Error* teaches element [h].

103. I disagree with Dr. Crovella's analysis.

104. First, regarding element [g], Dr. Crovella does not explain how *Nicholas* teaches that "web property content" can be "displayed on the at least one website" as required by this element. And it cannot for the same reasons discussed above – *Nicholas*'s node 130, which Dr. Crovella compares to the recited "website," cannot have anything displayed "on" it.

105. Second, Dr. Crovella confirmed that webpages must be at least partially transmitted to a client for impressions to be gathered. EX2004 (*Crovella Trans.*), 53:21-55:1. I agree that a POSITA would have understood this to be the way impressions are gathered in the context of the '898 Patent. In this context, Dr. Crovella has not explained how impressions of node 130 can be gathered.

106. Third, Dr. Crovella does not explain, with regard to either claim element, how impressions of the advertising material provided *within the content*, as required by elements [f], are monitored or determined to be valid. Regarding element [g], Dr. Crovella cites only to *Nicholas's* general teaching of impression tracking, but does not offer any explanation for how such monitoring would be effected, let alone on a content-specific basis. EX1002 (*Crovella Dec.*), ¶¶129-131.

107. Fourth, regarding element [h], Dr. Crovella cites to the additional teachings of *Error* as allegedly teaching the recited impression determination, but concedes those teachings are of “determining that a *web page* was properly delivered to the browser,” not impressions of *content* on a web page. EX1002 (*Crovella Dec.*), ¶¶132-135. But Dr. Crovella does not explain how a POSITA would have been motivated to modify *Nicholas's* node 130 with *Error's* teachings. Dr. Crovella focuses his motivation argument on the general benefits of *Error*, but doesn't explain how combining *Error's* teachings with *Nicholas's* would improve *Nicholas's* node 130. Nor, in any event, does *Error* correct the failures of *Nicholas* as to impressions of *content*. Impressions of a webpage may be obtained when the webpage is loaded into a user's browser, while impressions of content on the webpage may not be obtained until the content is loaded separately from the webpage. These are different concepts.

108. As set forth above, Petitioner does not rely on any of the other references applied in Grounds 1/2 to teach this feature, and I see no teaching in any of *Laidlaw* (EX1004) or *Mayadas* (EX1005) that would provide the above-noted deficiencies of *Nicholas* (and/or *Error*). Thus, element [f] is patentable over Grounds 1/2.

109. In Grounds 3/4, Dr. Crovella doesn't explain how *Manowitz* would correct the foregoing deficiencies, and doesn't rely on it to teach impression monitoring and/or determinations. EX1002 (*Crovella Dec.*), ¶¶184-189, Thus, elements [g] and [h] are patentable over Grounds 3/4.

D. Claim Element [k] Is Not Taught Or Suggested by the Ground References

110. Element [k] in independent claims 1, 10, and 19 recites the following:

[k] based on determining a number of valid impressions are met, electronically collecting, by the one or more processors, a share of the advertising revenue to be transmitted to the web property content owner.

111. Dr. Crovella asserts that a combination of *Nicholas* and *Mayadas* (Grounds 1/2) or *Nicholas*, *Mayadas*, and *Manowitz* (Grounds 3/4) teaches this claim element.

112. I disagree with Dr. Crovella's analysis on several accounts.

113. First, with respect to the *Nicholas/Mayadas* combination (Grounds 1/2), Dr. Crovella fails to explain how the combination teaches transmitting a

revenue share to any “web property content owner” as he has not explained how either *Nicholas* or *Mayadas* teach or suggest any identifiable “web property content” that is different from the website of *Nicholas* discussed in element [1f]. See EX1002, ¶144.

114. Second, Dr. Crovella alleges that “determining a number of valid impressions are met” can be satisfied by a *single* valid impression. See EX1002, ¶¶145-146. I disagree. A POSITA would have understood this phrase to require a *plural number of impressions* based on the plain meaning of the term (e.g., impressions requires a plural number). A POSITA would further have understood that a *plural number of impressions* was required because, if the system were meant to operate based on the detection of a single impression, there would be no need to track a number as a direct action could be taken based on the detection of a single impression. A POSITA would also have understood that a *plural number of impressions* was required because the ’898 patent is not related to payment on an ad-by-ad basis. Rather, as set forth above, it is related to fundraising based on numerous impressions.

115. Third, Dr. Crovella alleges that a POSITA would have looked to modify *Nicholas* with *Mayadas*’s teaching that “[e]ach time the advertisement is served and the specified action is taken by the consumer, the advertiser’s escrow account is debited for the one action” and the “publisher is remitted payment for

successfully serving the advertisement to a member of the target audience” (citing EX1005 (*Mayadas*), ¶¶[0037], [0043]), and that such a combination would teach the claim element if the claim were considered to be satisfied by a single valid impression. See EX1002 (*Crovella Dec.*), ¶¶145-146. But the claims of the ’898 patent do not cover such a situation, for the reasons set forth above.

116. Fourth, Dr. Crovella alleges that a POSITA would have understood, based on *Nicholas*’s teaching that impressions can be purchased on a cost per thousand basis, that *Mayadas*’s payment scheme could be modified such that payment can be effected “after a larger number of valid impressions had completed.” See EX1002 (*Crovella Dec.*), ¶¶147-149.

117. I disagree. *Mayadas* teaches that its payment-per-ad-service is an important feature to reduce risk. EX1005 (*Mayadas*), ¶[0038]. Dr. Crovella’s proposed modification is, therefore, the opposite of *Mayadas*’s teachings. And Dr. Crovella fails to cite even a single additional reference that teaches payment based on a larger number of valid impressions. The only support Dr. Crovella offers for his position is his own unsupported opinion. Finally, just because ads are *priced* on a volume basis does not make it obvious that a separate payment will not be made until a particular number of valid impressions has been reached. Thus, element [k] is patentable over Grounds 1/2.

118. Lastly, with respect to the *Nicholas/Mayadas/Manowitz* combination (Grounds 3/4), Dr. Crovella does not explain how *Manowitz* can correct any of the above deficiencies. EX1002 (*Crovella Dec.*), ¶¶184-189. Thus, element [k] is patentable over Grounds 3/4.

E. Claim 8 Is Not Taught or Suggested by the Ground References

119. Claims 8, 17, and 20 depend from claims 1, 10, and 19 respectively and recite:

prior to determining that the number of impressions is equal to the predetermined number of impressions, obtaining, by the one or more processors, via an input in the graphical user interface, a request for increasing the predetermined number of impressions of the advertising material for users visiting the at least one website; and based on the obtaining, automatically increasing the predetermined number of impressions.

120. Dr. Crovella applies separate grounds (Grounds 2 and 4) against claim 8 based on the additional *Yasnovsky* (EX1006) reference. EX1002 (*Crovella Dec.*), ¶¶175-181. Specifically, Dr. Crovella asserts that *Yanovsky's* teaching that its **advertiser** can make edits to its campaigns would have made it obvious to adjust the impression numbers entered into *Nicholas's* FIG. 8 (*see* element [d]), and that such a process would render claim 8 obvious.

121. I disagree. Claim 8 recites a process where an advertiser can request that the predetermined number of impressions that is offered to the advertiser for

the media buy be increased. *Nicholas* fails to teach or suggest offering a predetermined number of impressions to the advertiser for at least the reasons set forth in element [d], and *Yanovsky* fails to correct this basic deficiency. *Yasnovsky* teaches only editing a campaign budget, not impressions, let alone seeking an increase of impressions offered to an advertiser.

VIII. CONCLUSION

122. I declare that all statements made herein of my knowledge are true, and that all statements made on information and belief are believed to be true, and that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code.

Executed on November 3, 2025.

By: 
HARLEY R. MYLER, PH.D.

APPENDIX 1: CURRICULUM VITAE OF HARLEY R. MYLER, PH.D.

Harley R. Myler, Ph.D., P.E.

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Professional Preparation

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Virginia Military Institute 1975 B.S., Chemistry & Electrical Engineering
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Academic Appointments

2022- Professor Emeritus, Lamar University Electrical & Computer Engineering[†]

2001-2022 Professor, Lamar University Electrical Engineering

W^m B. and Mary G. Mitchell Endowed Chair in Telecommunications

2001-2019 Department Chair, Lamar University Electrical Engineering

1997-2001 Professor, University of Central Florida

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1986-1991 Assistant Professor, University of Central Florida

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President, I-Math Associates, Orlando, FL.

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Digital Systems Engineer, Space Communications Company, Las Cruces, NM.

Digital Systems Engineer, General Instrument Corporation, El Paso, TX.

CPT, US Army Air Defense Artillery, Missile Systems Officer.

Academic/Research/Creative Summary

I have been active in research since the beginning of my graduate education at the New Mexico State University. I worked as an Instructor and Research Assistant in the Department of Electrical & Computer Engineering and was funded through the Electronic Vision Analysis Laboratory (EVAL) under a grant from the U.S. Army Atmospheric Sciences Lab at White Sands, New Mexico. My dissertation, *Knowledge-Based Intelligent Tracking* (1985), was researched at the lab and was an early exploration into knowledge-based control and fuzzy-logic systems using digital video. It was one of the first engineering dissertations to be published in the nascent field of *Artificial Intelligence*. My books are in distribution internationally with over ten thousand volumes in print. At Lamar University, I was given the distinguished honor of being named the inaugural holder of the William B. and Mary G. Mitchell Endowed Chair in Telecommunications. Also at Lamar, I am the inventor of the first and second US Patents to be assigned to the university, patents that were prosecuted through the USPTO using private funding. I am the first engineering faculty member in Lamar's history to receive not one, but three *Fulbright Scholar* awards.

Patents and Software Copyrights

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simANNs©1989, ANNview©1991, parsimANNs© 1991, University of Central Florida.

UCFImage©1998, University of Central Florida.

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9. **Myler, H. R.**, Bagasrawala, S. A., Narayana, N. V. "OFDM and GSM Protocol Optimization on a Software Defined Radio Parallel Processing Architecture," *International Engineering Consortium Annual Review of Communications*, Volume 58, September 2005.
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11. **Myler, H. R.**, Guo, J., and Van Dyke-Lewis, M. "No-Reference Digital Video Quality Analysis," *International Engineering Consortium Annual Review of Communications*, Volume 57, September 2004.
12. Voicu, L. I., Uddin, M., **Myler, H. R.**, Gallagher, A., Schuler, J., "Clutter modeling in infrared images using genetic programming," *Optical Engineering* 39(09) pp. 2359-2371, Sep 2000.
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14. **Myler, H. R.**, "Teaching C & Fortran Simultaneously to Beginning Engineering Students," Southeastern Section ASEE Annual Conference, Clemson University, April 1999.
15. Voicu, L. I. and **Myler, H. R.**, "Function support retrieval using a genetic algorithm cloning operator," *Electronic Imaging Technical Working Group Newsletter*, 8:1, January 1998, Invited.
16. Rabadi, W. A. and **Myler, H. R.**, "A fast wavelet based algorithm for signal recovery from partial Fourier domain information," *IEEE Trans. on Circuits and Systems*, 45:8, August 1998.
17. Rabadi, W. A. and **Myler, H. R.**, "Iterative Image Reconstruction: A Wavelet Approach," *IEEE Signal Processing Letters*, 5:1, January 1998.
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19. Voicu, L. I., **Myler, H. R.** and Weeks, A. R. "Practical considerations on color image enhancement using homomorphic filtering," *Journal of Electronic Imaging*, Volume 6, Issue 1, January 1997, pp. 108-113.
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22. Weeks, A.R., **Myler, H. R.**, and Emery, J.D., "Nonlinear Image Transformations Implemented with Spatial Light Modulators," *Optical Engineering*, 33:3, 1994.
23. Gonzalez, A. J., **Myler, H. R.**, McKenzie, F.D., Towhidnejad, M. and Kladke, R.R., "Representation of Process System Knowledge through Constraint Description," *IEEE Transactions on Knowledge and Data Engineering*, 6:4, 1994.
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25. Towhidnejad, M., **Myler, H. R.** and Gonzalez, A.J., "Constraint Mechanism in Automated Knowledge Acquisition," *Applied Artificial Intelligence*, 7,1993.
26. Gonzalez, A. J., **Myler, H. R.** and McKenzie, F.D., "Representation of Process System Knowledge through Component Constraint Descriptions," *Engineering Applications of Artificial Intelligence*, 6:3, 1993.
27. Weeks, A.R., **Myler, H. R.**, and Lewis, M. D., "An Adaptive Thresholding Algorithm that Maximizes Edge-Features," *Journal of Electronic Imaging*, November 1993.
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29. **Myler, H. R.**, Weeks, A.R., Gillis, R. K. and Hall, G. W., "Object-oriented Neural Simulation Tools for a Hypercube Parallel Machine," *Neurocomputing*, 4, 1992.
30. Weeks, A.R., **Myler, H. R.**, and Emery, J.D., "The Implementation of a Hybrid Optical Homomorphic Filter Using an LCTV as a Spatial Light Modulator," *Optical Engineering*, 31:9, 1992.
31. **Myler, H. R.**, "A Neural Computer for Memory-Based Reasoning in Spacecraft Launch Operations," *Journal of Neural Network Computing*, 2:4, Spring 1991.
32. Gonzalez, A. J., **Myler, H. R.** and Kladke, R.R., "Identification of Unconstrained Item Descriptions Using String-Match Heuristics," *International Journal of Expert Systems: Research and Applications*, 4:3, 1991.
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35. **Myler, H. R.**, Jolson, A.S. and Weeks, A.R., "Automated Evaluation of Ocular Deviation," *Binocular Vision*, 6:3, 1991.
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41. Gonzalez, A.J., **Myler, H. R.**, Owen, B.C. and Towhidnejad, M., "Automated Generation of Knowledge from CAD Design Data Bases," Proceedings of the 1st Florida Artificial Intelligence Research Symposium, May 1988. Note: This paper was selected for inclusion in the book *Advances in Artificial Intelligence Research*, Vol. 1, JAI Press, 1989.
42. Karshmer, A.I., **Myler, H. R.** and Davis, R., "The Architecture of an Inexpensive and Portable Talking-Tactile Terminal to Aid the Visually Handicapped," *Computer Standards and Interfaces*, Vol. 4, North-Holland, 1986.

Conference and Proceedings Articles and Presentations

1. **Myler, H. R.**, "SeaDog: AUV support for Lionfish harvesting," Poster Presentation, *2018 Lionfish Summit*, Florida Fish and Wildlife Conservation Commission, Cocoa Beach, FL, October 2-4, 2018.
2. **Myler, H. R.**, Liv Haselbach, Qin Qian, "Assessing Environmental Impact of Artificial Reefs Using AUVs," Poster Presentation, *2018 Lionfish Summit*, Florida Fish and Wildlife Conservation Commission, Cocoa Beach, FL, October 2-4, 2018.
3. Qin Qian, Fernando Aleman, Hayden Rice, Andre Trottier, Liv Haselbach, **Myler, H. R.**, "pH Profiles around Pervious Concrete in Fresh Water," *Proceedings of the International Low Impact Development Conference* 2018.
4. M. W. Rony, P. Bhowmik, **Myler, H. R.** and P. Mondol, "Short Channel Effects suppression in a dual-gate Gate-All-Around Si nanowire junctionless nMOSFET," *2016 9th International Conference on Electrical and Computer Engineering (ICECE)*, Dhaka, Bangladesh, 2016, pp. 538-541. doi:10.1109/ICECE.2016.7853976
5. M. W. Rony, **Myler, H. R.** and P. Mondol, "Sensitivity of a 10nm Dual-Gate GAA Si Nanowire nMOSFET to Process Variation," *2016 19th International Conference on Computer and Information Technology (ICCIT)*, Dhaka, 2016.
6. **Myler, H. R.**, "Design for a source-agile automatic direction finder (ADF)," *Proc. SPIE 9474, Signal Processing, Sensor/Information Fusion, and Target Recognition XXIV*, 947418 (21 May 2015); doi:10.1117/12.2176429.

7. **Myler, H. R.**, "A High-Voltage Testing Apparatus for Power Line Clamp On Meters," *The 3rd Annual IEEE Green Technologies Conference*, Baton Rouge, April 2011.
8. **Myler, H. R.**, "Network and Media Convergence: Issues, Challenges and Trends," Keynote Speech, *IEEE International Conference on Information and Communications Technology*, Cairo, Egypt, December 2007.
9. **Myler, H. R.**, "Bandwidth Issues in Advanced Video Quality and Delivery," *Proceedings of the IEEE International Conference on Information and Communications Technology, invited*, Cairo, Egypt, December 2007.
10. **Myler, H. R.**, "Intellectual Property Issues," Southwest Electrical and Computer Engineering Department Heads Association (SWECEDHA) Annual Meeting, Sante Fe, New Mexico, November 2007.
11. **Myler, H. R.**, Bagasrawala, S. A., Narayana, N. V., "A Concurrent Processing Approach for Software Defined Radio Baseband Design," *2005 IEEE Region V Technical Conference*, Denver, Colorado, April 2005.
12. **Myler, H. R.**, "Early Electrical Engineering Concepts Engagement in a Freshman Level Introductory Course," *Gulf Southwest Section ASEE Annual Conference*, Texas Tech University, Lubbock Texas, March 2004.
13. Osmanovic, N., Hrستمovic, N. and **Myler, H. R.**, "A Testbed for Auralization of Graphic Art," *IEEE Region V 2003 Annual Technical Conference*, New Orleans, Louisiana, April 2003.
14. **Myler, H. R.**, "An Analysis of Programming Aptitude of Engineering Undergraduates," *Southeastern Section ASEE Annual Conference*, Virginia Polytechnic and State University, April 2000.
15. **Myler, H. R.**, "Characterization of disagreement in multiplatform and multisensor fusion analysis," *Signal Processing, Sensor Fusion, and Target Recognition IX*, SPIE Aerosense 2000, Orlando, Florida, April 2000.
16. Voicu, L. I., Patton, R. and **Myler, H. R.**, "Detection performance prediction on IR images assisted by evolutionary learning," *Proceedings of the SPIE International Symposium on Aerospace Sensing*, Orlando, April 1999.
17. Patton, R., Voicu, L. I., Smith, S. P. and **Myler, H. R.**, "Computationally intelligent approach to SAR-ATR," *Proc. SPIE Vol. 3721, p. 543-553, Algorithms for Synthetic Aperture Radar Imagery VI*, Orlando, April 1999.
18. Voicu, L. I., Patton, R. and **Myler, H. R.**, "Multi-criterion vehicle pose estimation for SAR-ATR," *Proc. SPIE Vol. 3721, p. 497-506, Algorithms for Synthetic Aperture Radar Imagery VI*, Orlando, April 1999.
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20. Voicu, L. I. and **Myler, H. R.**, "Cloning Operator and its Applications," *Proceedings of the SPIE Conference on Applications and Science of Computational Intelligence*, Orlando, Florida, April 1998.
21. M. Uddin and **Myler, H. R.**, "Parallel Algorithm for Target Recognition using a Multiclass Hash Database," *Proceedings of the SPIE Conference on Signal Processing, Sensor Fusion and Target Recognition VII*, Orlando, Florida, April 1998.
22. **Myler, H. R.**, "Semiotic Foundation for Multisensor/Multilook Fusion," *Proceedings of the SPIE Conference on SPIE Conference on Signal Processing, Sensor Fusion and Target Recognition VII*, Orlando, Florida, April 1998.
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24. **Myler, H. R.**, "Application of the Neocognitron to target identification," Proc. SPIE Vol. 3077, p. 282-290, *Applications and Science of Artificial Neural Networks III*, April 1997.
25. Rabadi, W. A., **Myler, H. R.**, "Image reconstruction using wavelets," Proc. SPIE Vol. 2751, p. 153-158, *Hybrid Image and Signal Processing V*, June 1996.
26. Rabadi, W. A., **Myler, H. R.**, Weeks, A. R., Gamble, K. J., "Pyramid framework for image reconstruction from nonimaged laser speckle," Proc. SPIE Vol. 2484, p. 309320, *Signal Processing, Sensor Fusion, and Target Recognition IV*, July 1995.
27. Gamble, K. J., Weeks, A. R., **Myler, H. R.**, Rabadi, W. A., "Results of two-dimensional time-evolved phase screen computer simulations," Proc. SPIE Vol. 2471, p. 170-180, *Atmospheric Propagation and Remote Sensing IV*, July 1995.
28. Weeks, A. R., Felix, C. E., **Myler, H. R.**, "Edge detection of color images using the HSL color space," Proc. SPIE Vol. 2424, p. 291-301, *Nonlinear Image Processing VI*, March 1995.
29. **Myler, H. R.**, Weeks, A. R., Voicu, L., "RGB color enhancement using homomorphic filtering," Proc. SPIE Vol. 2421, p. 43-50, *Image and Video Processing III*, March 1995.
30. Yoo, H. J., Crevier, D., Lepage, R., **Myler, H. R.**, "Line drawing extraction from gray level images by feature integration," Proc. SPIE Vol. 2353, p. 96-107, *Intelligent Robots and Computer Vision XIII: Algorithms and Computer Vision*, October 1994.
31. Clifton, D.B., **Myler, H. R.**, Weeks, A.R., "An Approach to the Acquisition of a World Frame using a Visual Associative Memory," *Proceedings of IEEE International conference on Neural networks, IEEE World Congress on Computational Intelligence*, Vol. 2, June 1994, Orlando.
32. Rabadi, W., **Myler, H. R.** and Weeks, A.R., "Large-Scale Image Transforms on a Hypercube Supercomputer," *Proceedings of the Second Congress of the Network of Arab Scientists and Technologists Abroad*, Amman, Jordan, July 1994.

33. **Myler, H. R.**, Weeks, A.R. and Yoo, H. J., "Grayscale Image Preprocessing for Viewpoint Independent 3-D Extraction of Objects," *Proceedings of the SPIE International Symposium on Optics, Imaging and Instrumentation*, San Diego, 1994.
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35. Weeks, A.R., **Myler, H. R.**, and Apley, L. F., "An adaptive thresholding algorithm which maximizes the contour features within the thresholded image," *Proceedings of the Symposium on Electronic Imaging Science and Technology*, San Jose, February 1994.
36. Hague, G. E., Weeks, A. R., **Myler, H. R.**, "Histogram equalization of the saturation component for true-color images using the C-Y color space," Proc. SPIE Vol. 2298, p. 236-247, *Applications of Digital Image Processing XVII*, September 1994.
37. Weeks, A. R., **Myler, H. R.**, Cinci, L. D., "Interpretive programming language for image algebra," Proc. SPIE Vol. 2300, p. 180-191, *Image Algebra and Morphological Image Processing V*, June 1994.
38. Lewis, M. D., Weeks, A. R., **Myler, H. R.**, "Maximization of contour edge detection using adaptive thresholding," Proc. SPIE Vol. 1955, p. 400-407, *Signal Processing, Sensor Fusion, and Target Recognition II*, September 1993.
39. Yoo, H. J., **Myler, H. R.**, Weeks, A. R., "Surface extraction using spatial position from line drawings," Proc. SPIE Vol. 1955, p. 388-399, *Signal Processing, Sensor Fusion, and Target Recognition II*, September 1993.
40. Weeks, A. R., **Myler, H. R.**, Jolson, A. S., "Calibration issues in the measurement of ocular movement and position using computer image processing," Proc. SPIE Vol. 1567, p. 77-87, *Applications of Digital Image Processing XIV*, December 1991.
41. **Myler, H. R.**, Weeks, A. R., Van Dyke-Lewis, M., "Decision-directed entropy-based adaptive filtering," Proc. SPIE Vol. 1565, p. 57-68, *Adaptive Signal Processing*, December 1991.
42. Wenaas, H., Weeks, A. R., **Myler, H. R.**, "Computer-generated correlated noise images for various statistical distributions," Proc. SPIE Vol. 1569, p. 410-421, *Stochastic and Neural Methods in Signal Processing, Image Processing, and Computer Vision*, October 1991.
43. **Myler, H. R.**, Weeks, A.R. and Hooper-Giles, J., "A Novel Approach to Aircraft Silhouette Recognition Using Genetic Algorithms," *Proceedings of the SPIE International Symposium on Optical Engineering and Photonics*, 1992.
44. Weeks, A.R., **Myler, H. R.**, and Hinnerschitz, S., "Aspects of Real-Time Video Tracker Design," *Proceedings of the SPIE International Symposium on Optical Engineering and Photonics*, 1992.

45. **Myler, H. R.**, "Experiments in Computer Vision Instructional Development," *Proceedings of the 21st Annual Pittsburgh Conference on Modeling and Simulation*, May 1990.
46. Gilson, R.D., **Myler, H. R.** and Gibbons, S.C., "Taxonomic Transformations of Visual Media Selections into Display Specifications," *Proceedings of the Image V Conference*, June 1990.
47. Weeks, A.R., Bauer, C.S., **Myler, H. R.** and Khajenoori, S., "An Innovative Undergraduate Computer Systems Laboratory," *Proceedings of the 1990 ASEE Conference*, June 1990.
48. Gillis, R.K., Heileman, G.L., **Myler, H. R.**, and Georgiopoulos, M., "Software Tools for the Development of Artificial Neural Network Models," *Proceedings of the 1990 ASEE Conference*, June 1990.
49. Weeks, A.R., Khajenoori, S., Bauer, C.S., and **Myler, H. R.**, "Embedded Microprocessors: A Capstone Course in Undergraduate Computer Engineering Education," *Proceedings of the 21st Annual Pittsburgh Conference on Modeling and Simulation*, May 1990.
50. **Myler, H. R.**, "Machine Vision Analysis of Human Eye Movements," *Proceedings of the 20th Annual Pittsburgh Conference on Modeling and Simulation*, May 1989.
51. **Myler, H. R.**, "Design Optimization of a Six-Legged Walking Platform," *Proceedings of the 20th Annual Pittsburgh Conference on Modeling and Simulation*, May 1989.
52. Gonzalez, A.J., and **Myler, H. R.**, "An Intelligent Instructor Support System for Training Simulators," *Proceedings of the 1989 AI and Simulation Conference*, April 1989.
53. Gonzalez, A. J., **Myler, H. R.**, and Towhidnejad, M., "Automated Knowledge Generation in Support of Shuttle Ground Operations," *Proceedings of the Artificial Intelligence in Government Conference*, March 1989.
54. **Myler, H. R.** and Gonzalez, A. J., "Automated Knowledge Base Generation from CAD Databases Using Relaxation Techniques," *Proceedings of the International Symposium on Intelligent Control*, August 1988.
55. **Myler, H. R.**, "Visual Primitive Recognition," *Proceedings of the 19th Annual Pittsburgh Conference on Modeling and Simulation*, May 1988.
56. **Myler, H. R.**, "Object-Oriented Training Simulation," *Proceedings of the SCS Eastern Simulation Conference*, April 1988.
57. **Myler, H. R.**, "Application of Hopfield Networks to Visual Tracking," *Proceedings of the 18th Annual Pittsburgh Conference on Modeling and Simulation*, 18, 1987.
58. **Myler, H. R.**, Thompson, W. E. and Flachs, G. M., "Knowledge-Based Enhancement of Visual Tracking," *Proceedings of the IEEE International Conference on Acoustics, Speech, and Signal Processing*, 2, 1985.

59. **Myler, H. R.**, Thompson, W. E. and Flachs, G. M., "Application of Expert System Techniques to a Visual Tracker," *Proceedings of the SPIE Conference on Artificial Intelligence II*, 1985.
60. **Myler, H. R.** and Thompson, W. E., "Knowledge-Based Intelligent Tracking," *IEEE International Conference on Systems , Man, and Cybernetics*, 1985.
61. **Myler, H. R.** and Thompson, W. E., "Computer Simulation of Intelligent Tracking," *Proceedings of the 17th Annual Pittsburgh Conference on Modeling and Simulation*, 1986.
62. Karshmer, A. I., **Myler, H. R.** and Davis, R., "An Inexpensive and Portable Talking Tactile Terminal for the Visually Handicapped," *Proceedings of the 19th Annual Hawaii International Conference on Systems Science*, 3, 1986.

Awards and Honors

W^m B. and Mary G. Mitchell Endowed Chair, Lamar University, inaugural holder, 2001- 2022.

Fulbright Scholar, *École Supérieure Privée d'Ingénierie et de Technologies* (ESPRIT) in Tunis, Tunisia, February 2012 and July 2012.

Tau Beta Pi (engineering), *Eta Kappa Nu* (electrical engineering)

Educator of the Year, UCF Department of Electrical & Computer Engineering, 1993.

Researcher of the Year, UCF Department of Computer Engineering, 1988, 1989, 1990, 1992.

Academy Member, Klipsch School of Electrical & Computer Engineering, New Mexico State University.

CRC Freshman Chemistry Award, 1973.

Eagle Scout, 1970, Troop 108, Leetsdale, Pennsylvania, BSA.

Doctoral Field Studies Supervised (Lamar University)

Mohammad A Islam, DE, 2020

Gate-All-Around Nanowire MOSFET for DNA Sequencing

Palash K Datta, DE, 2020

Ultra Low Power Preset/Evaluate Style Circuit Design Using Novel Spintronic Switch

Koji Hirano, DE, 2014

Image Processing with Memristors

Abdulhamid A. Al Hamoud, DE, 2013

Model Design for Industrial Supervisory Control

Rajesh Guntaka, DE, 2012

Regression and Kriging Analysis for Grid Power Factor Estimation

Wei-Tai Hsu, DE, 2009

A Dynamic Facial Recognition System for Tracking Individuals in an Enclosed Domain

Jing Jane Guo, DE, 2003

Gabor Difference Analysis of Digital Video Quality

Dissertations Supervised (University of Central Florida)

Liviu Voicu, PhD, 1997

Issues in Multiresolution Genetic Algorithms

Wissam Rabadi, PhD, 1995

Multiresolution Image Processing

Hoi Yoo, PhD, 1993

VITREO: Viewpoint Independent Three-dimensional Recognition and Extraction of Objects

Massood Towhidnejad, PhD, 1990

Functional Conflict Resolution in Automated Knowledge Generation

John DeCatrel, PhD, 1990

Recognition by Aspect Constrained Stochastic Optimization

Gregory Heileman, PhD, 1989

Theoretical and Experimental Aspects of Supervised Learning in Artificial Neural Networks.

Theses (MSEE) Supervised—Lamar University

Mohammed Wahiduzzaman Rony, 2016, *Short Channel Effects Suppression in a Dual-Gate Gate-All-Around Si Nanowire Junctionless nMOSFET.*

Nirban Bhowmick, 2015, *Mobile Multimedia Performance Differences in a UMTS LTE-Based Self-Organizing Network With and Without Soft Handover*

Mohammad Al-Amin Chowdhury, 2015, *Femtocell and its Deployment with Macrocell Network for Increasing Capacity of the Entire Network*

Sreenivasarao Kallemudi, 2011, *High Fidelity Mobility Model Simulation for a DVB-H Terminal Communication*

Anupam Shital Nepal, 2011, *Optimization of Handoff Between CDMA and WLAN*

Viren Mathuria, 2010, *Ultra-Wideband RFID Based Localization, Obstacle Detection and Speed Optimization for Automated Guided Vehicles*

Chiraq Soni, 2007, *Analysis of Cell Phone Repeaters and Prototype Design of an Economical CDMA Cell Phone Coverage Signal Expander for Indoor Applications*

Hikmet Cenghiz, 2006, *A Biomimetic Approach to Motion Estimation in a SIMD Architecture*

Pramod Varma, 2005, *High Speed Data Transfer Over IEEE 1394 for Software Defined Radio*

Venkata Prabala, 2005, *Analysis of the Infinite Image Window*

Akshat Nanda, 2005, *A Performance Analysis of Micro-Architectures for Mobile Device Communications*

Deepika Shevade, 2005, *Multiple Object Tracking in an Image Sequence*

Shabbir A. Bagasrawala, 2004, *OFDM in a Parallel Architecture Implementation of a Software Defined Radio*

Naresh V. Narayana, 2004, *GSM Baseband Optimization On A Software Defined Radio Parallel Processing Architecture*

Mithun Bannerjee, 2004, *Implementation of ITU-T G.729 Speech Codec*

Samir V. Bansikar, 2003, *Optimization of JPEG Image Compression Using Video Quality Metric*

Ravi Bellapu, 2003, *Steganographic Techniques for No-Reference Digital Video Quality Analysis*

Supriya Kher, 2003, *Object Tracking in Compressed MPEG Video Bitsream*

Prashant. K. Ruparel, 2003, *Auralization Synthesis (Sonification) for Control Room Alerts*

Theses (MSEE) Supervised—University of Central Florida

Mosleh Uddin, 1998, *A Parallel Algorithm for Target Classification Using Geometric Hashing*

Arthur Chang, 1994, *Implementation of the Two-Dimensional Fast Hartley Transform on a Fine-grained SIMD Architecture*

Benito Graniela, 1992, *Visual Primitive Decomposition Using the Pattern Spectrum*

Jill Giles, 1991, *A Medial Axis Transformation Language for Recognizing Aircraft Silhouettes Using a Genetic Search Technique*

Kathleen Meade, 1991, *A Novel Algorithm for Detecting Erroneous Control Points in Geometric Correction of Imagery*

Gary Hall, 1991, *ANNview: A CASE Tool for Development and Evaluation of Artificial Neural Networks*

Randall Gillis, 1991, *A General Object-Oriented Environment for the Development of Artificial Neural Network Models on a Hypercube Multiprocessor Network*

Shuk Fong Lai, 1990, *Algorithms for Fine-Grained Architecture Implementation of 2-Dimensional Fast Walsh-Hadamard Transforms*

Cynthia Johnson, 1990, *Counterpropagation Neural Network Detection of Visual Primitives*

Mitchell Winter, 1989, *VLSI Implementation of a Configurable Neural Node*

Paul Vogt, 1988, *An Adaptive Multi-Scene Correlation Algorithm*

Ronald Bauman, 1988, *GAPP Instruction Simulator*

Eric Grajales, 1987, *Edge Confidence Estimation for Subsequent Image Analysis*

Julie LeBlanc, 1987, *Implementation of a Parallel Ynet Architecture*

Nancy Burrell, 1986, *Adaptive Discrete Cosine Transform Image Compression Applied to Visual Flight Simulators*

Robert Holden, 1986, *Design Considerations in the Development of an Automated Cartographic System*

Research & Equipment Grants

Center for Advances in Port Management (CAPM), *Autonomous Robot Measurement of pH Clouds Surrounding Recycled Concrete Aggregates in Marine Life-Cycle Analysis*, \$34,784.

Center for Advances in Water and Air Quality (CAWAQ), *AARISE: An Aquatic Robot for Lionfish Remediation*, \$24.9K.

Operation Technology, Inc., *ETAP*, \$125K.

Entergy Corporation, *Power Grid Defense for Solar Magnetic Storms*, \$30K.

Phillips Electronics, *LineDancer Software Radio development system*, \$25K.

Launching the Texas Engineering Education Pipeline: Deploying the Infinity Project Statewide, THECB, Austin, Texas, \$71K.

Edison Museum Website, Entergy Corporation, Beaumont, Texas, \$5K.

Adaptive Synthesis of an Objective Image Quality Function, TeraNex, Inc., Orlando, Florida, \$190,469.

Memory-Based Reasoning for Advanced Launch Operations, NASA Grant #NCC-10-0003, Kennedy Space Center, Titusville, Florida. \$147,448.

Automated Knowledge Generation (Co-Pi with A. Gonzalez) NASA Grant #NAG-10-0043, Kennedy Space Center, Titusville, Florida, \$456,095.

Visual Simulation Characteristics as Related to Human Factors and Training Needs (Co-Pi with R. Gilson) Army Research Institute, NTSC, Orlando, Florida. \$75K.

Visual Display Taxonomy (Summer, Co-Pi with R. Gilson). ARI Grant #M67-004/87/M/2227, Naval Training Systems Center, Orlando, Florida, \$22,924.

Investigation of Connectionist Vision Models for Knowledge-Based Intelligent Tracking Systems. Center for Research in Electro-Optics and Lasers, grant #2052033, University of Central Florida, \$44,670.

CREOL[†] Support to the Innovative Science & Technology Program II: Array Imaging (2 years, Co-Pi with P. Gatt, M. Stickley, A. Weeks) Office of Naval Research, Boston, Massachusetts, \$140,173.

CREOL[†] Support to the Innovative Science & Technology Program III: Array Imaging (Co-Pi with P. Gatt, M. Stickley, A. Weeks) Office of Naval Research, Boston, Massachusetts, \$94,462+30K for nCUBE.

CREOL[†] Support to the Innovative Science & Technology Program IV: Array Imaging (Co-Pi with P. Gatt, M. Stickley, A. Weeks) Office of Naval Research, Boston, Massachusetts, \$412K.

Software Tools for Neural Network Modelling, (Co-PI with M. Georgiopolous, & G. Heileman), Florida High Technology Council, \$20K.

Parallel Network Modelling Tools, Martin Marietta Orlando Aerospace, \$10K. Florida Space Grant Consortium--Undergraduate Research Participation Program NASA sponsored program for undergraduate research, \$20K.

[†] Center for Research in Electro-Optics & LASERs

Design Considerations in Construction of Planetary Walking Vehicles, Martin Marietta Astronautics Company, Denver, Colorado, \$3K.

nCUBE Parallel Supercomputer (Equipment Grant w/ A. Weeks) nCUBE, Cupertino, California, \$160K.

Sparcserver 4/280 (Equipment Grant w/ A. Weeks) Sun Microsystems Incorporated, Mountainview, California, \$141K.

Expert Systems Software/Hardware. (Equipment Grant w/ A. Gonzalez) NASA Grant #NAG-10-0043, Kennedy Space Center, Titusville, Florida, \$31,025.

Towerview Workstations (Equipment Grant) NCR Corporation, Engineering & Manufacturing, Lake Mary, Florida, \$6,345.

Consulting Experience

I-Math Associates, Orlando, FL.

McDonnell-Douglas Aerospace Co., St. Louis, MO.

Martin-Marietta (now Lockheed), Orlando, Florida and Denver, CO.

National Instruments, Austin, TX.

Analog Devices, Norwood, MA.

Professional Organizations and Licenses

IEEE –Life Senior Member (2019-present)

Senior Member (1991-2018)

East Area Chair, IEEE Region V (2006-2007)

Chair, Beaumont Section (2002-2006)

Florida Professional Engineer (by examination/retired)

Electrical Engineering Lic. 94001152

Texas Professional Engineer (retired)

Electrical Engineering Lic. 94458

Eta Kappa Nu (HKN) Honor Society for Electrical and Computer Engineers.

Tau Beta Pi (TBP) Honor Society for American Engineers.

APPENDIX 2: MATERIALS CONSIDERED IN THE PREPARATION OF THIS DECLARATION

Exhibit No.	Description
1001	U.S. Patent No. 11,416,898 B2 to John E. DeTitta (filed May 24, 2019, issued Aug. 16, 2022) (“’898” or “’898 patent”)
1002	Declaration Of Mark Crovella, PH.D.
1003	U.S. Patent Application Pub. No. 2004/0054589 A1 to Frank C. Nicholas et al. (filed September 8, 2003, published March 18, 2004) (“ <i>Nicholas</i> ”)
1004	U.S. Patent Application Pub. No. 2004/0128547 A1 to Robert Laidlaw et al. (filed December 31, 2002, published July 1, 2004) (“ <i>Laidlaw</i> ”)
1005	U.S. Patent Application Pub. No. 2001/0039515 A1 to Vijay Mayadas (filed May 2, 2001, published November 8, 2001) (“ <i>Mayadas</i> ”)
1006	U.S. Patent Application Pub. No. 2005/0027594 A1 to Elliot Yasnovsky et al. (filed November 3, 2003, published February 3, 2005) (“ <i>Yasnovsky</i> ”)
1007	U.S. Patent No. 8,156,216 B1 to Brent Error (filed January 10, 2003, issued April 10, 2012) (“ <i>Error</i> ”)
1008	U.S. Patent No. 6,138,142 to Steven J. Linsk (filed December 20, 1996, issued October 24, 2000) (“ <i>Linsk</i> ”)
1009	Excerpts from Robbin Zeff et al., Advertising on the Internet (2d ed. 1999)
1010	Excerpts from Microsoft Computer Dictionary (5th ed. 2002)
1011	Excerpts from Dictionary of Computer and Internet Terms (8th ed. 2003)
1012	U.S. Provisional Patent Application No. 60/298,329
1013	U.S. Provisional Patent Application No. 60/362,297
1014	Excerpts from Bob Baxley, Making the Web Work: Designing Effective Web Applications (2002) (“ <i>Baxley</i> ”)

Exhibit No.	Description
1015	WO 01/59653 A1 to Neal J. Manowitz (filed January 31, 2001, published August 16, 2001) (“ <i>Manowitz</i> ”)
1016	Excerpts from James F. Korsh, <i>Data Structures, Algorithms, and Program Style</i> (1986) (“ <i>Korsh</i> ”)
2002	Prosecution History for the ’898 Patent (U.S. Application No. 16/422,106) (Pros. His.)
2003	Prosecution History for the ’290 Patent (U.S. Application No. 14/015,604) (’290 Patent Pros. His.)
2004	October 24, 2025 Deposition Transcript of Dr. Mark Crovella, Ph.D.
2005	Plaintiff’s Response To Defendant’s Motion To Dismiss in <i>BrodTi Inc., v. Google LLC</i> , C.A. No. 24-173-JCB (D. Del.).
2006	Printout of www.youtube.com as it appeared on April 30, 2007 from the Internet Archive.
2007	Dictionary Definitions of “option,” “predetermined,” and “select” from <i>The New Oxford American Dictionary</i> by the Oxford University Press, 2001
2008	Dictionary Definitions of “option,” “predetermined,” and “select” from <i>Webster’s Third New International Dictionary</i> , Merriam-Webster, Inc., 2002

APPENDIX 3: CHALLENGED CLAIMS

[1pre] 1. A computer-implemented method comprising:

[1a] receiving, by one or more processors, from a given client, over an Internet-based communication link from a browsing application executed on the given client processor to the one or more processors, a message comprising data, the data comprising advertising material to populate on one or more websites;

[1b] identifying, by the one or more processors, the given client, based on receiving the message, an identifier, wherein the message comprises the identifier;

[1c] based on a message provided by a given client, generating, by the one or more processors, a webpage, wherein the generating comprises providing, via a graphical user interface of the webpage, a plurality of advertising buy options for selection by a given client accessing said webpage;

[1d] obtaining, by the one or more processors, via an input in the graphical user interface, a selection of one or more of the advertising buy options, wherein the selected one or more advertising buy options comprise at least one website of the respective websites and a predetermined number of impressions of the advertising material for users visiting the at least one website;

[1e] generating, by the one or more processors, on a database accessible to the one or more processors, a repository for advertising revenue based on the selection;

[1f] based on obtaining the selection, populating, by the one or more processors, the advertising material on the at least one website, wherein the populating comprises placing the advertising material within web property content of the at least one website;

[1g] monitoring, by the one or more processors, a number of impressions of the advertising material provided to users accessing the web property content displayed on the at least one website;

[1h] determining, by the one or more processors, whether an impression of the advertising material is valid, wherein the impression is valid based on a predetermined impression tracking system;

[1i] determining, by the one or more processors, that the number of valid impressions is greater than or equal to the predetermined number of impressions;

[1j] upon determining a number of valid impressions are met, ceasing, by the one or more processors, the populating of the advertising material on the at least one website; and

[1k] based on determining a number of valid impressions are met, electronically collecting, by the one or more processors, a share of the advertising revenue to be transmitted to the web property content owner.

2. The computer-implemented method of claim 1, wherein the advertising materials are selected from the group consisting of: a banner ad, a pop-up, a text advertisement, and a rich media advertisement.

3. The computer-implemented method of claim 1, wherein the repository comprises a fund.

4. The computer-implemented method of claim 1, wherein the electronically collecting comprises applying the electronic revenue from the selected one or more advertising buy options, to the repository.

5. The computer-implemented method of claim 1, wherein the data comprises a project type.

6. The computer-implemented method of claim 5, wherein the project type is selected from the group consisting of: a non-profit project, a business project, a real estate project, and an art project.

7. The computer-implemented method of claim 1, further comprising:

receiving, by the one or more processors, from the given client, in the message, a target fund amount for the content.

8. The computer-implemented method of claim 1, further comprising:
prior to determining that the number of impressions is equal to the predetermined number of impressions, obtaining, by the one or more processors, via an input in the graphical user interface, a request for increasing the predetermined number of impressions of the advertising material for users visiting the at least one website; and
based on the obtaining, automatically increasing the predetermined number of impressions.

9. The computer-implemented method of claim 1,
wherein the data comprises a predetermined target audience, and
wherein the at least one website comprises one or more websites frequented by the pre-determined target audience.

[10pre] 10. A computer program product comprising:

a computer readable storage medium readable by one or more processors and storing instructions for execution by the processor for performing a method comprising:

[10a] receiving, by the one or more processors, from a given client, over an Internet-based communication link from a browsing application executed on the given client processor to the one or more processors, a message comprising data, the data comprising advertising material to populate on one or more websites;

[10b] identifying, by the one or more processors, the given client, based on receiving the message, an identifier, wherein the message comprises the identifier;

[10c] based on a message provided by a given client, generating, by the one or more processors, a webpage, wherein the generating comprises providing, via a graphical user interface of the webpage, a plurality of advertising buy options for selection by a given client accessing said webpage;

[10d] obtaining, by the one or more processors, via an input in the graphical user interface, a selection of one or more of the advertising buy options, wherein the selected one or more advertising buy options comprise at least one website of the respective websites and a predetermined number of impressions of the advertising material for users visiting the at least one website;

[10e] generating, by the one or more processors, on a database accessible to the one or more processors, a repository for advertising revenue based on the selection;

[10f] based on obtaining the selection, populating, by the one or more processors, the advertising material on the at least one website, wherein the populating comprises placing the advertising material within web property content of the at least one website;

[10g] monitoring, by the one or more processors, a number of impressions of the advertising material provided to users accessing the web property content displayed on the at least one website;

[10h] determining, by the one or more processors, whether an impression of the advertising material is valid, wherein the impression is valid based on a predetermined impression tracking system;

[10i] determining, by the one or more processors, that the number of valid impressions is greater than or equal to the predetermined number of impressions;

[10j] upon determining a number of valid impressions are met, ceasing, by the one or more processors, the populating of the advertising material on the at least one website; and

[10k] based on determining a number of valid impressions are met, electronically collecting, by the one or more processors, a share of the advertising revenue to be transmitted to the web property content owner.

11. The computer program product of claim 10, wherein the advertising materials are selected from the group consisting of: a banner ad, a pop-up, a text advertisement, and a rich media advertisement.

12. The computer program product of claim 10, wherein the repository comprises a fund.

13. The computer program product of claim 10, wherein the electronically collecting comprises applying the electronic revenue from the selected one or more advertising buy options, to the repository.

14. The computer program product of claim 10, wherein the data comprises a project type.

15. The computer program product of claim 14, wherein the project type is selected from the group consisting of: a non-profit project, a business project, a real estate project, and an art project.

16. The computer program product of claim 10, the method further comprising:

receiving, by the one or more processors, from the given client, in the message, a target fund amount for the content.

17. The computer program product of claim 10, further comprising:
prior to determining that the number of impressions is equal to the predetermined number of impressions, obtaining, by the one or more processors, via an input in the graphical user interface, a request for increasing the predetermined number of impressions of the advertising material for users visiting the at least one website; and

based on the obtaining, automatically increasing the predetermined number of impressions.

18. The computer program product of claim 10,
wherein the data comprises a predetermined target audience, and

wherein the at least one website comprises one or more websites frequented by the pre-determined target audience.

[19pre] 19. A system comprising:

a memory;

one or more processors in communication with the memory; and

program instructions executable by the processor via the memory to perform a method,

the method comprising:

[19a] receiving, by the one or more processors, from a given client, over an Internet-based communication link from a browsing application executed on the given client processor to the one or more processors, a message comprising data, the data comprising advertising material to populate on one or more websites;

[19b] identifying, by the one or more processors, the given client, based on receiving the message, an identifier, wherein the message comprises the identifier;

[19c] based on a message provided by a given client, generating, by the one or more processors, a webpage, wherein the generating comprises providing, via a graphical user interface of the webpage, a plurality of advertising buy options for selection by a given client accessing said webpage;

[19d] obtaining, by the one or more processors, via an input in the graphical user interface, a selection of one or more of the advertising buy options, wherein the selected one or more advertising buy options comprise at least one website of the respective websites and a predetermined number of impressions of the advertising material for users visiting the at least one website;

[19e] generating, by the one or more processors, on a database accessible to the one or more processors, a repository for advertising revenue based on the selection;

[19f] based on obtaining the selection, populating, by the one or more processors, the advertising material on the at least one website, wherein the populating comprises placing the advertising material within web property content of the at least one website;

[19g] monitoring, by the one or more processors, a number of impressions of the advertising material provided to users accessing the web property content displayed on the at least one website;

[19h] determining, by the one or more processors, whether an impression of the advertising material is valid, wherein the impression is valid based on a predetermined impression tracking system;

[19i] determining, by the one or more processors, that the number of valid impressions is greater than or equal to the predetermined number of impressions;

[19j] upon determining a number of valid impressions are met, ceasing, by the one or more processors, the populating of the advertising material on the at least one website; and

[19k] based on determining a number valid impressions are met, electronically collecting, by the one or more processors, a share of the advertising revenue to be transmitted to the web property content owner.

20. The system of claim 19, the method further comprising:

prior to determining that the number of impressions is equal to the predetermined number of impressions, obtaining, by the one or more processors, via an input in the graphical user interface, a request for increasing the predetermined number of impressions of the advertising material for users visiting the at least one website; and

based on the obtaining, automatically increasing the predetermined number of impressions.

APPENDIX 4: UNDERSTANDING OF THE LAW

I have applied the following legal principles provided to me by counsel in arriving at the opinions set forth in this report.

Legal Standard for Prior Art

I am not an attorney. I have been informed by attorneys of the relevant legal principles and have applied them to arrive at the opinions set forth in this declaration.

I understand that the petitioner for inter partes review may request the cancelation of one or more claims of a patent based on grounds available under 35 U.S.C. § 102 and 35 U.S.C. § 103 using prior art that consists of patents and printed publications.

Anticipation and Prior Art

I understand that § 102 specifies when a challenged claim is invalid for lacking novelty over the prior art, and that this concept is also known as “anticipation.” I understand that a prior art reference anticipates a challenged claim, and thus renders it invalid by anticipation, if all elements of the challenged claim are disclosed in the prior art reference. I understand the disclosure in the prior art reference can be either explicit or inherent, meaning it is necessarily present or implied. I understand that the prior art reference does not have to use the same words as the challenged claim, but all of the requirements of the claim

must be disclosed so that a person of ordinary skill in the art could make and use the claimed subject-matter.

In addition, I understand that § 102 also defines what is available for use as a prior art reference to a challenged claim.

Under § 102(a), a challenged claim is anticipated if it was patented or described in a printed publication in the United States or a foreign country before the challenged claim's date of invention.

Under § 102(b), a challenged claim is anticipated if it was patented or described in a printed publication in the United States or a foreign country more than one year prior to the challenged patent's filing date.

Under § 102(e), a challenged claim is anticipated if it was described in a published patent application that was filed by another in the United States before the challenged claim's date of invention, or was described in a patent granted to another that was filed in the United States before the challenged claim's date of invention.

I understand that a challenged claim's date of invention is presumed to be the challenged patent's filing date. I also understand that the patent owner may establish an earlier invention date and "swear behind" prior art defined by § 102(a) or § 102(e) by proving (with corroborated evidence) the actual date on which the

named inventors conceived of the subject matter of the challenged claim and proving that the inventors were diligent in reducing the subject matter to practice.

I understand that the filing date of a patent is generally the filing date of the application filed in the United States that issued as the patent. However, I understand that a patent may be granted an earlier effective filing date if the patent owner properly claimed priority to an earlier patent application.

I understand that when a challenged claim covers several structures, either generically or as alternatives, the claim is deemed anticipated if any of the structures within the scope of the claim is found in the prior art reference.

I understand that when a challenged claim requires selection of an element from a list of alternatives, the prior art teaches the element if one of the alternatives is taught by the prior art.

Legal Standard for Obviousness

I understand that even if a challenged claim is not anticipated, it is still invalid if the differences between the claimed subject matter and the prior art are such that the claimed subject matter would have been obvious to a person of ordinary skill in the pertinent art at the time the alleged invention.

I understand that obviousness must be determined with respect to the challenged claim as a whole.

I understand that one cannot rely on hindsight in deciding whether a claim is obvious.

I also understand that an obviousness analysis includes the consideration of factors such as (1) the scope and content of the prior art, (2) the differences between the prior art and the challenged claim, (3) the level of ordinary skill in the pertinent art, and (4) “secondary” or “objective” evidence of non-obviousness.

Secondary or objective evidence of non-obviousness includes evidence of: (1) a long felt but unmet need in the prior art that was satisfied by the claimed invention; (2) commercial success or the lack of commercial success of the claimed invention; (3) unexpected results achieved by the claimed invention; (4) praise of the claimed invention by others skilled in the art; (5) taking of licenses under the patent by others; (6) deliberate copying of the claimed invention; and (7) contemporaneous and independent invention by others. However, I understand that there must be a relationship between any secondary evidence of non-obviousness and the claimed invention.

I understand that a challenged claim can be invalid for obviousness over a combination of prior art references if a reason existed (at the time of the alleged invention) that would have prompted a person of ordinary skill in the art to combine elements of the prior art in the manner required by the challenged claim. I understand that this requirement is also referred to as a “motivation to combine,”

“suggestion to combine,” or “reason to combine,” and that there are several rationales that meet this requirement.

I understand that the prior art references themselves may provide a motivation to combine, but other times simple common sense can link two or more prior art references. I further understand that obviousness analysis recognizes that market demand, rather than scientific literature, often drives innovation, and that a motivation to combine references may come from market forces.

I understand obviousness to include, for instance, scenarios where known techniques are simply applied to other devices, systems, or processes to improve them in an expected or known way. I also understand that practical and common-sense considerations should be applied in a proper obviousness analysis. For instance, familiar items may have obvious uses beyond their primary purposes.

I understand that the combination of familiar elements according to known methods is obvious when it yields predictable results. For instance, obviousness bars patentability of a predictable variation of a technique even if the technique originated in another field of endeavor. This is because design incentives and other market forces can prompt variations of it, and predictable variations are not the product of innovation, but rather ordinary skill and common sense.

I understand that a particular combination may be obvious if it was obvious to try the combination. For example, when there is a design need or market

pressure to solve a problem and there are a finite number of identified, predictable solutions, a person of ordinary skill has good reason to pursue the known options within his or her technical grasp. This would result in something obvious because the result is the product not of innovation but of ordinary skill and common sense. However, I understand that it may not be obvious to try a combination when it involves unpredictable technologies.

It is further my understanding that a proper obviousness analysis focuses on what was known or obvious to a person of ordinary skill in the art, not just the patentee. Accordingly, I understand that any need or problem known in the field of endeavor at the time of invention and addressed by the patent can provide a reason for combining the elements in the manner claimed.

It is my understanding that the Manual of Patent Examining Procedure §2143 sets forth the following as exemplary rationales that support a conclusion of obviousness:

- Combining prior art elements according to known methods to yield predictable results;
- Simple substitution of one known element for another to obtain predictable results;
- Use of known technique to improve similar devices (methods, or products) in the same way;
- Applying a known technique to a known device (method, or product) ready for improvement to yield predictable results;
- Choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success;

- Known work in one field of endeavor may prompt variations of it for use in either the same field or a different one based on design incentives or other market forces if the variations are predictable to one of ordinary skill in the art;
- Some teaching, suggestion, or motivation in the prior art that would have led one of ordinary skill to modify the prior art reference or to combine prior art reference teachings to arrive at the claimed invention.

A person of ordinary skill in the art looking to overcome a problem will often use the teachings of multiple publications together like pieces of a puzzle, even though the prior art does not necessarily fit perfectly together. Therefore, I understand that references for obviousness need not fit perfectly together like puzzle pieces. Instead, I understand that obviousness analysis takes into account inferences, creative steps, common sense, and practical logic and applications that a person of ordinary skill in the art would employ under the circumstances.

I understand that a claim can be obvious in light of a single reference, if the elements of the challenged claim that are not explicitly or inherently disclosed in the reference can be supplied by the common sense of one of skill in the art.

I understand that obviousness also bars the patentability of applying known or obvious design choices to the prior art. One cannot patent merely substituting one prior art element for another if the substitution can be made with predictable results. Likewise, combining prior art techniques that are interoperable with respect to one another is generally obvious and not patentable.

In order for a claim to be found invalid based upon a modification or combination of the prior art, there must be reasonable expectation that a person of ordinary skill would have successfully modified or combined the prior art to arrive at the claimed arrangement. This does not mean that it must be certain that a person of ordinary skill would have been successful – the law only requires that the person of ordinary skill in the art would have perceived a reasonable expectation of success in modifying or combining the prior art to arrive at the claimed invention.

In sum, my understanding is that obviousness invalidates claims that merely recite combinations of, or obvious variations of, prior art teachings using understanding and knowledge of one of skill in the art at the time and motivated by the general problem facing the inventor at the time. Under this analysis, the prior art references themselves, or any need or problem known in the field of endeavor at the time of the invention, can provide a reason for combining the elements of or attempting obvious variations on prior art references in the claimed manner.

Legal Standard for Claiming the Benefit of the Filing Date of an Earlier-Filed Patent Application

I understand that an invention described in a patent may claim the benefit of, or priority to, a prior application filed in the United States or in a foreign country. I understand that, to claim the benefit of an earlier-filed application, the later-filed application must contain a specific reference to the earlier-filed application. In addition, I understand that the later-filed application must be an application for a

patent for an invention which is also disclosed in the prior application. I understand that the disclosure in the prior application and the later-filed application must be sufficient to comply with the written description and enablement requirements of 35 U.S.C. § 112, which provides for two requirements: (1) a written description, which must allow persons of ordinary skill in the art to recognize that the inventor invented what is claimed; and (2) enablement, meaning that the patent must teach an ordinary artisan to make and use the invention without undue experimentation. I understand that a patent cannot claim priority to earlier applications if the later patent includes new matter not present in those earlier disclosures. For example, I understand that a claim in a continuation-in-part application is entitled only to the filing date of the continuation-in-part application when the claim recites a feature which was not disclosed or adequately supported by a proper disclosure under 35 U.S.C. 112 in the earlier-filed parent application.

Legal Standard for Claim Construction

I understand that before any invalidity analysis can be properly performed, the scope and meaning of the challenged claims must be determined by claim construction.

I understand that a patent may include two types of claims, independent claims and dependent claims. I understand that an independent claim stands alone and includes only the limitations it recites. I understand that a dependent claim

depends from an independent claim or another dependent claim. I understand that a dependent claim includes all the limitations that it recites in addition to the limitations recited in the claim (or claims) from which it depends.

In comparing the challenged claims to the prior art, I have carefully considered the patent and its file history in light of the understanding of a person of skill at the time of the alleged invention.

I understand that to determine how a person of ordinary skill would have understood a claim term, one should look to sources available at the time of the alleged invention that show what a person of skill in the art would have understood disputed claim language to mean. It is my understanding that this may include what is called “intrinsic” evidence as well as “extrinsic” evidence.

I understand that, in construing a claim term, one should primarily rely on intrinsic patent evidence, which includes the words of the claims themselves, the remainder of the patent specification, and the prosecution history. I understand that extrinsic evidence, which is evidence external to the patent and the prosecution history, may also be useful in interpreting patent claims when the intrinsic evidence itself is insufficient. I understand that extrinsic evidence may include principles, concepts, terms, and other resources available to those of skill in the art at the time of the invention.

I understand that words or terms should be given their ordinary and accepted meaning unless it appears that the inventors were using them to mean something else or something more specific. I understand that to determine whether a term has special meaning, the claims, the patent specification, and the prosecution history are particularly important, and may show that the inventor gave a term a particular definition or intentionally disclaimed, disavowed, or surrendered claim scope.

I understand that the claims of a patent define the scope of the rights conferred by the patent. I understand that because the claims point out and distinctly claim the subject matter which the inventors regard as their invention, claim construction analysis must begin with and is focused on the claim language itself. I understand that the context of the term within the claim as well as other claims of the patent can inform the meaning of a claim term. For example, because claim terms are normally used consistently throughout the patent, how a term is used in one claim can often inform the meaning of the same term in other claims. Differences among claims or claim terms can also be a useful guide in understanding the meaning of particular claim terms.

I understand that a claim term should be construed not only in the context of the particular claim in which the disputed term appears, but in the context of the entire patent, including the entire specification. I understand that because the

specification is a primary basis for construing the claims, a correct construction must align with the specification.

I understand that the prosecution history of the patent as well as art incorporated by reference or otherwise cited during the prosecution history are also highly relevant in construing claim terms. For instance, art cited by or incorporated by reference may indicate how the inventor and others of skill in the art at the time of the invention understood certain terms and concepts. Additionally, the prosecution history may show that the inventors disclaimed or disavowed claim scope, or further explained the meaning of a claim term.

With regard to extrinsic evidence, I understand that all evidence external to the patent and prosecution history, including expert and inventor testimony, dictionaries, and learned treatises, can also be considered. For example, technical dictionaries may indicate how one of skill in the art used or understood the claim terms. However, I understand that extrinsic evidence is considered to be less reliable than intrinsic evidence, and for that reason is generally given less weight than intrinsic evidence.

I understand that in general, a term or phrase found in the introductory words or preamble of the claim, should be construed as a limitation if it recites essential structure or steps, or is necessary to give meaning to the claim. For instance, I understand preamble language may limit claim scope: (i) if dependence

on a preamble phrase for antecedent basis indicates a reliance on both the preamble and claim body to define the claimed invention; (ii) if reference to the preamble is necessary to understand limitations or terms in the claim body; or (iii) if the preamble recites additional structure or steps that the specification identifies as important.

On the other hand, I understand that a preamble term or phrase is not limiting where a challenged claim defines a structurally complete invention in the claim body and uses the preamble only to state a purpose or intended use for the invention. I understand that to make this determination, one should review the entire patent to gain an understanding of what the inventors claim they invented and intended to encompass in the claims.

I understand that 35 U.S.C. § 112 ¶ 6 created an exception to the general rule of claim construction called a “means plus function” limitation. These types of terms and limitations should be interpreted to cover only the corresponding structure described in the specification, and equivalents thereof. I also understand that a limitation is presumed to be a means plus function limitation if (a) the claim limitation uses the phrase “means for”; (b) the “means for” is modified by functional language; and (c) the phrase “means for” is not modified by sufficient structure for achieving the specified function.

I understand that a structure is considered structurally equivalent to the corresponding structure identified in the specification only if the differences between them are insubstantial. For instance, if the structure performs the same function in substantially the same way to achieve substantially the same result. I further understand that a structural equivalent must have been available at the time of the issuance of the claim.