

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

GOOGLE LLC,
Petitioner,

v.

WILDSEED MOBILE LLC,
Patent Owner

Case IPR2023-00248
Patent 7,376,414

DECLARATION OF DR. HENRY H. HOUH UNDER 37 C.F.R. § 1.68 IN
SUPPORT OF PETITIONER'S REPLY

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I, Henry H. Houh, do hereby declare as follows:

I. INTRODUCTION

1. I make this declaration based upon my own personal knowledge and, if called upon to testify, would testify competently to the matters stated herein.

2. As I stated previously, I have been asked by Google LLC (“Google”) to provide my expert opinion in connection with the *Inter Partes* Review of U.S. Patent No. 7,376,414 (“the ’414 patent”) concerning whether the ’414 patent is unpatentable over certain prior art. This declaration is a supplement to my declaration signed November 29, 2022 regarding my opinions on issues relating to the patentability of claims 1–7 and 9–14 (“the Challenged Claims”) of the ’414 patent. As I explain more fully below, it remains my opinion that all of the Challenged Claims would have been obvious to a person of ordinary skill in the art (“POSITA”) at the time of the alleged invention.

3. I am being reimbursed for reasonable and customary expenses associated with my work and testimony in this investigation. My compensation is not contingent on the outcome of this matter or the specifics of my testimony, and I have no other interest in this case or the parties thereto.

4. I previously submitted a Declaration as Exhibit 1003, setting forth my background, credentials, and curriculum vitae, which provides further details

(referred to herein as my "first Declaration"). I submit this second Declaration in response to the Declaration of Dr. Sam Malek, filed as Exhibit 2009.

5. In this second Declaration, I provide responses to some of Dr. Malek's analysis and the Patent Owner's analysis and provide further details of a POSITA's understanding of the references and how the references teach the limitations of the Challenged Claims. Although I may not respond to each of Dr. Malek's points, any silence should not be construed as agreement with his analysis; rather, the points to which I do not respond either are irrelevant to the analysis or do not outweigh the clear disclosure and/or teachings of the cited references.

6. In addition to the materials I reviewed in preparing my first Declaration, in preparing this second Declaration, I have also reviewed:

- a) Ex.2009, Declaration of Dr. Sam Malek, including the Exhibits cited therein;
- b) Paper 19, Patent Owner's Response;
- c) Ex.1028, Transcript of Deposition of Dr. Sam Malek; and
- d) any other document cited below.

7. In forming the opinions expressed in this Declaration, I relied upon my education and experience in the relevant field of art, and have considered the viewpoint of a person of ordinary skill in the art ("POSITA"), as of May 11, 2001. I have also considered:

- a) the documents listed above,
- b) any additional documents and references cited in the analysis
below,
- c) the relevant legal standards, including the standard for
obviousness, and
- d) my knowledge and experience based upon my work in this area
as described below.

II. UNDERSTANDING OF PATENT LAW

8. I am not an attorney. For the purposes of this declaration, I have been informed about certain aspects of the law that are relevant to my opinions. My understanding of the law was provided to me by Petitioner's attorneys and was set forth in my first Declaration.

III. ASSERTED REFERENCES AND ANALYSIS

A. Kawasaki

9. In my first Declaration, I relied on the Kawasaki reference as providing teachings relevant to many of the claim limitations. As I stated in my first Declaration, Kawasaki describes an "invention that provides for profiling a user of the Internet." Kawasaki, Abstract. Kawasaki's technique "includes scanning content information of an Internet user to generate unknown data and processing unknown data to determine its relevance to predefined categories of interest" to "form a profile

of the user that may ultimately be used to target offers” including advertisements “to users based upon the profile.” Kawasaki, Abstract.

10. In Kawasaki “content information of an Internet user” is broadly defined. For example, Kawasaki specifies that the “scanning and analyzing capabilities extend to any type of digital content in systems such as the Web Browsers 11, E-mail Clients/Servers 12, UseNet Clients/Servers 13, Personal 14 and Server-based Search Engines 16.” Kawasaki, 4:1-5.

11. With respect to “processing unknown data to determine its relevance to predefined categories of interest” (Kawasaki, Abstract), Kawasaki explains that “content information of an Internet User is scanned to generate unknown data.” Kawasaki, 2:63-66. This scanning may occur “at any number of locations” including “the client’s server” or “the client’s computer.” Kawasaki, 2:63-66. Subsequently, the “unknown data are processed to determine their relevance to predefined categories of interest” (Kawasaki, 2:66-3:1) using what Kawasaki calls “Recognizers.” Kawasaki’s Recognizers are “algorithms and rules” which “‘recognize’ a match of incoming, unknown data with Data Sets” corresponding to various areas of interest. Kawasaki, 4:6-31. These Recognizers “are executed against incoming unknown data requested by Users” and “the statistical output from Recognizers 23 indicate whether a given set of unknown data received or sent

through the Internet 18 has a good match to the installed Recognizers 23.” Kawasaki, 4:32-37.

12. In other words, Recognizers process the scanned content of the user's incoming unknown data (e.g., scanned content of the user's e-mail), and determine whether the content is relevant (recognizable) to a certain category of interest. In one example, “if a golfing Recognizer 23 is loaded and the User views golf-related Web Pages 13a, E-mail 12a, User Groups 16a or other digital content, the golfing Recognizer 23 returns a positive match for that Data Set 21.” Kawasaki, 4:37-41. More specifically, “each discrete unit of information newly encountered by Users is analyzed by Recognizers 23 against a set of known Data Sets 21 such as sports, news, health information, etc.” Kawasaki, 5:1-4.

13. In Dr. Malek's Declaration, Dr. Malek asserts that “Kawasaki requires using artificial intelligence neural networks.” Ex.2009, ¶ 50. Dr. Malek also asserts that the “recognizers” in Kawasaki are neural networks.” Ex.2009, ¶ 51.

14. Kawasaki describes the use of neural networks in one passage, reproduced below:

The two modules, scanning and analyzing, named in the above-referenced patent application are capable of determining the relevance of unknown data to a known data set through efficient analytic models. These modules are used in real time to assess the incoming data from Services to the Users of the Services for their relevance to the common (or specific) predefined categories of interest to Advertisers. Referring to FIG. 2, this is accomplished through collecting representative data

sets of major areas of interest, the Data Sets 21, and using a developed set of algorithms and weighted rules necessary to analyze the unknown content for a match with Data Sets 21. The development of these algorithms and weighted rules is accomplished through the use of a three-tier feed-forward artificial neural network, a Neural Net 22, with a learning algorithm as described in the above-referenced patent application. Various artificial neural networks are commercially available that could be used for this purpose. The output from Neural Net 22 is algorithms and rules, the Recognizers 23, which in essence “recognize” a match of incoming, unknown data with Data Sets 21.

Kawasaki, 4:6-24.

15. A POSITA would have appreciated Kawasaki to rely on neural networks, consistent with Dr. Malek's assertion that “Kawasaki requires using artificial intelligence neural networks.” Ex.2009, ¶50. This is apparent from the sentence quoted above, where Kawasaki details the development of a “algorithms and weighted rules [] accomplished through the use of a three-tier feed-forward artificial neural network, a Neural Net 22, with a learning algorithm.”

16. But contrary to Dr. Malek's assertion that the ““recognizers’ in Kawasaki are neural networks” (Ex.2009, ¶51) or that the “recognizers 23 are trained neural networks” (Ex.2009, ¶52), a POSITA would have appreciated that Kawasaki's recognizers are “algorithms and rules” as Kawasaki explicitly states. Kawasaki's “recognizers” are not, themselves, “artificial intelligence neural networks” as Dr. Malek alleges.

17. This is also made clear from Figure 2 of Kawasaki, reproduced below.

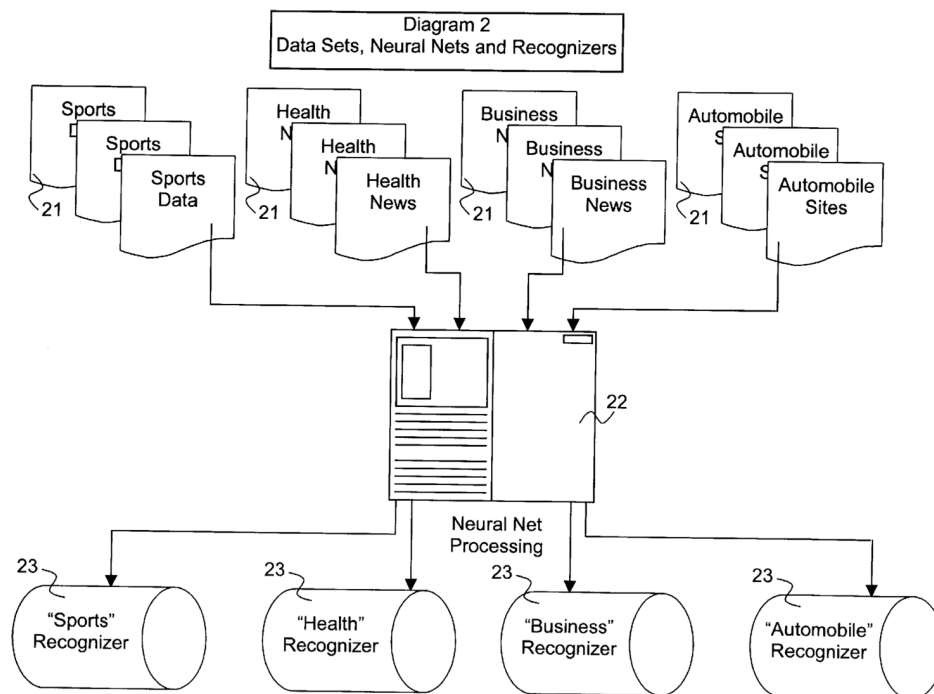


FIG. 2

Kawasaki, Fig. 2

18. As shown in Figure 2, above, Kawasaki refers to the neural networks as element 22: Neural Net Processing 22. The recognizers are labeled with a different element (element 23) and are depicted differently. This difference, read in context with Kawasaki itself, informs a POSITA that the recognizers are not neural networks, as Dr. Malek contends.

19. This figure is also consistent with Dr. Malek's declaration. For example, Dr. Malek contends that "[n]eural networks were known, but they used hardware and software that was far more powerful than anything a cell phone offered in 2001" and Dr. Malek lists "storage space, RAM" and "processing power" that would be needed "to run Kawasaki's neural networks." Ex.2009, ¶¶126-127.

Kawasaki's Figure 2 acknowledges that powerful hardware would be necessary for the development of the neural network in Kawasaki, as element 22 is depicted as a server computing device, but the recognizers are not depicted in the same way.

20. The difference between neural networks and the Kawasaki recognizers is also consistent with Dr. Malek's testimony, where he acknowledges that the "development of algorithms and weighted rules to analyze the unknown content is achieved through a three-tier feed-forward artificial neural network." Ex. 2009, ¶ 55 (citing Kawasaki, 4:6-32). This distinction, that a neural network is used to **develop** algorithms and weighted rules, is blurred by Dr. Malek, but it is an important distinction to make, and confirms that the recognizers in Kawasaki are not neural networks themselves.

21. Figure 2, and the distinction between neural networks and recognizers in Kawasaki, is also consistent with Dr. Malek's deposition testimony. For example, Dr. Malek acknowledged that neural networks do not themselves output neural networks. Kawasaki, in Figure 2, shows recognizers 23 as the output from the neural network 22, and thus, it follows that the recognizers are not themselves neural networks. This is likewise consistent with Kawasaki's characterization of recognizers as "algorithms and rules" as the "output from Neural Net 22," and not that the "Neural Net 22" outputs another neural network.

22. Dr. Malek also refers to U.S. Patent No. 6,266,664, which is incorporated by reference by Kawasaki (*see* Kawasaki, 3:63-4:1), to support his opinion, claiming that “[a]rtificial intelligence neural networks are the only method that the ‘664 patent discloses for generating a rating that indicates a match compared to predetermined characteristics.” Ex.2009, ¶54. The focus of the ‘664 Patent is the training of a neural network, using large quantities of training data. However, the **output** in the ‘664 Patent is a “list of regular expressions along with neural-net assigned weights” which are used to characterize a web page as containing potentially offensive content. *See* Ex.1024, 8:21-30. A regular expression is a form of a rule, as it is a pattern used to match character combinations in strings of text. A dictionary explains that regular expressions “are derived from various strands of mathematical theory.” Webster’s Computing Dictionary, pp. 315-316. Thus, the ‘664 Patent’s regular expressions are one form of “algorithms and rules” that are the output of a neural network in Kawasaki.

23. Evaluating regular expressions like the examples given in the ‘664 patent is not computationally intensive, and a POSITA would have understood how regular expressions could be used to implement Kawasaki’s recognizers. For example, just as the ‘664 patent gives an example of characterizing a web page as containing adult content when a regular expression reveals the page has text corresponding to “18 years of age,” a golf recognizer (like the one detailed in my

first Declaration) could characterize email as referring to golf if the email has the text “golf” or other similar phrases like “round of 18” or “your clubs.”

24. Thus, for these reasons, I disagree with Dr. Malek that Kawasaki's recognizers are neural networks.

25. Dr. Malek also asserts that “Kawasaki's unknown data and profile are ‘derived from messages’ and that the “unknown data and the profile are not data taken from messages.” Ex.2009, ¶83. Dr. Malek also states that the “recognizers in Kawasaki use the unknown data as input” and that “recognizers operate on numbers; they take numbers as input and generates numbers as output.” Ex.2009, ¶84. I do not agree with this opinion because it is inconsistent with Kawasaki itself. Nothing in Kawasaki suggests that the “unknown data” are numbers. Rather, as Kawasaki states, “[r]ecognizers are executed against incoming unknown data requested by Users” and “if a golfing Recognizer 23 is loaded and the User views golf-related Web Pages 13a, E-mail 12a....” Kawasaki, 4:32-41.

26. A POSITA would have understood that golf-related email would contain text, for example, the example text I detailed in my first Declaration (“Let's go to the driving range today to practice our short game and then hit a quick nine holes”) or the example I mentioned during my deposition (“Let's go play a round of golf.”) (Ex.2011, 39:10-12). Further, users do not request numbers and do not view numbers — users view words in email. Thus, when Kawasaki states “unknown data

requested by Users,” a POSITA would have recognized it to be meaning that unknown data is text.

27. To the extent Dr. Malek is arguing that my deposition testimony that states that recognizers are sets of arithmetic means that Kawasaki operates on numbers, he is reading the deposition testimony in a manner that is inconsistent with Kawasaki. As I stated, some recognizers could be run using sets of arithmetic or additions and multiplications, but I did not suggest that **all** recognizers used arithmetic operations only. Rather, as Kawasaki states, recognizers are algorithms and rules. Regular expressions, taught by the '664 patent, are an example of algorithms and rules that operate on words. Even further, a POSITA would have recognized that a common method of representing text documents (e.g., emails in Kawasaki) for analysis would be to use a bag of words array, which converts text into an array of numbers. Those arrays of numbers would be used as input to Kawasaki's algorithms and rules to determine whether the user's received email corresponded to a particular category (e.g., golf).

28. Thus, I disagree with his opinion that Kawasaki's recognizers “operate on numbers” because it is inconsistent with Kawasaki itself.

29. Dr. Malek's misinterpretations of Kawasaki, and particularly, Dr. Malek's mischaracterization of Kawasaki's recognizers as neural networks, affects the remainder of his analysis.

30. For example, Dr. Malek asserts “A POSITA would not have been motivated to combine Kawasaki’s artificial intelligence neural networks with a cell phone, which was not technologically feasible at the time of the ’414 patent.” Ex.2009, p. 68. But this assertion does not accurately characterize the combination of teachings I detailed in my first Declaration. Combining the teachings of Kawasaki’s recognizers does not require running artificial intelligence networks on a 2001-era cell phone, contrary to Dr. Malek’s arguments. Ex.2009, ¶124. Likewise, there is no need to assert that “a POSITA would be motivated to combine the cell phone of Frerichs with a neural network.” Ex.2009, ¶124. The operative question, instead, is whether Kawasaki’s teachings of recognizers, or “algorithms and rules,” could be combined with the teachings of Frerichs of a cellular device. Dr. Malek does not analyze this question at all and does not rebut the analysis contained in my first Declaration. It remains my opinion that Kawasaki’s teachings of recognizers, or “small and compact” “data sets” and “algorithms and rules,” would have been combined with the teachings of Frerichs of cell phones or cellular devices.

31. Likewise, Dr. Malek’s assertion that he was “not aware of any deployments of neural networks on a mobile device in or around the year 2001” is not pertinent to the combination of teachings set forth in my first Declaration, because combining the teachings of Kawasaki’s recognizers with Frerichs’ cellular device teachings does not require deployment of a neural network on a mobile

device. Ex.2009, ¶125. Dr. Malek's assertion that "Running Kawasaki's neural networks on a 2001-era cell phone as Petitioner proposes would not have been feasible" (Ex.2009, ¶126) is also irrelevant, notwithstanding that it also does not accurately reflect the analysis in my first Declaration. Similarly, Dr. Malek's statement that "a cell phone would have had to be plugged in continuously" is not relevant to the teachings of Kawasaki relied upon in my first Declaration. Ex.2009, ¶127.

32. The next few paragraphs of Dr. Malek's declaration, referring to the "technical difficulties of running a neural network on a cell phone" (Ex.2009, ¶128) and whether "[n]eural networks require more than simple arithmetic operations" (Ex.2009, ¶129) also do not affect the analysis in my first Declaration regarding Kawasaki's recognizers, because Kawasaki's recognizers are not neural networks.

33. Dr. Malek then turns to the question of extracting information from email messages and storing a database of words and weights on a 2001-era mobile device. Ex.2009, ¶¶129-130. To the extent this testimony refers to Kawasaki's recognizers (and not the mischaracterization of Kawasaki's teachings as requiring neural networks on a cellular device), I disagree. Extracting text from email and applying rules, evaluating regular expressions, or converting text into a bag of words representation, is not beyond the capability of a 2001-era cellular device. Additionally, to teach the claim language as I analyzed in my first Declaration

requires only a single recognizer in Kawasaki, which would therefore not need to include “several lists of natural language words and their weights for the various recognizers of Kawasaki.” Ex. 2009, ¶¶130-134. Rather, to recognize that received email messages corresponded to golf would require only one list of natural language words and weights, which is not an unreasonable amount of data to store on a cellular device.

34. Dr. Malek then returns to his opinion regarding neural networks and cellular devices, arguing that “[i]t was not until 2017... that Apple and Google provided support for execution of Neural Network models on iOS and Android devices, respectively” (Ex.2009, ¶135) and arguing “it was not possible to run Neural Networks on mobile devices around the time of invention” (Ex.2009, ¶137) but for the same reasons detailed above, this is not relevant to the Kawasaki recognizers, because the Kawasaki recognizers are not neural networks. The same goes for Dr. Malek's analysis regarding “training and running Neural Network models on server and desktop computers” as compared to mobile and cell phone devices. *See* Ex.2009, ¶¶138-142.

35. Dr. Malek then asserts that I was mistaken regarding Kawasaki's reference to “very small and compact” recognizers. Ex.2009, ¶144. But again, Dr. Malek is incorrectly concluding that Kawasaki's recognizers are neural networks or neural network models, instead of accurately analyzing Kawasaki's algorithms and

rules (e.g., regular expressions as shown in the '664 patent). As the '664 patent shows, regular expressions are no more than lines of text used to recognize patterns in text, and indeed are "small and compact" and easy to distribute consistent with Kawasaki's disclosure.

36. Dr. Malek also asserts that I presented flawed reasoning or logic in contending that a cell phone could be a client in Kawasaki. But his analysis in this section (Ex.2009, ¶¶145-152) relies again on his mistaken assumption that Kawasaki's recognizers are neural networks, and that the proposed combination of teachings would require a cellular device to run a neural network. That is not the case, as detailed above.

37. The next sections of his declaration (Ex.2009, ¶¶ 153-162) are similar; each relies on the mistaken conclusion that Kawasaki's recognizers are neural networks that would need to run on a cellular device. Because this conclusion is incorrect, none of Dr. Malek's arguments in this section are relevant to the analysis proposed in my first Declaration.

38. As a result, it remains my opinion that the teachings of Kawasaki, including Kawasaki's teachings of recognizers, would have been combined with the teachings of Frerichs, and that a POSITA would have had a reasonable expectation of success in combining the teachings to render obvious the Challenged Claims of the '414 patent (along with Kauffman, discussed below).

B. Kauffman

39. In my first Declaration, I provided analysis of the Kauffman reference, U.S. Patent Application Publication No. 2007/0083886 (Ex.1006).

40. I described Kauffman as relating to an “arrangement for inserting advertisement media into a streaming multimedia file.” Kauffman, Abstract. Kauffman's arrangement “uses a caching inserter including a first cache for storing a loaded advertisement file and a second cache for holding the streaming multimedia file that needs to be buffered as the advertisement file is sent to the end-user.” Kauffman, Abstract.

41. As I also stated in my first Declaration, Kauffman explains its technique in more detail with reference to Figure 1, and in particular, the caching inserter 30, which is located at a local point of presence. Kauffman also explains that the local point of presence may be located at an end user's device, such as a set-top box. For example, Kauffman explains that the caching inserter in Kauffman “is disposed at a local point of presence (POP) which intercepts a video stream destined for an end user.” Kauffman, ¶7. The local point of presence may be “disposed in a communication [] device at an end-user location” such as a “residential set-top box.” Kauffman, claims 2, 12, 17, 18. Thus, as I explained, Kauffman contemplates that the caching inserter, having the first and second caches, may be located at the end-user or client device. Kauffman, claims 2, 12, 17, 18.

42. Kauffman also explains that “[w]hen insertion of advertising ... is desired, the video stream is stored/buffered at the local POP and the advertisement is played. When the ad is completed, the first stream is then played out of the buffer.” Kauffman, ¶7. Kauffman explains that the “POP where the advertisement cache is located could be at any convenient place along the signal path between the information source(s) and the end-user.” Kauffman, ¶9. In the video example of Kauffman, the client's device may include the advertisement cache, as it explains that “the advertisement could be part of a set-top box at the end-user location.” Kauffman, ¶9.

43. Kauffman also explains that “an end-user 10 is depicted as a residential end-user that is capable of receiving multimedia information through either a television 12 (using a set-top box 14 or other appropriate residential gateway device) or a computer terminal 16 (including appropriate software to convert the received files and play them on the display of computer 16).” Kauffman, ¶17. Thus, Kauffman's techniques are applicable to a wide variety of computing devices, including cellular devices (e.g., cellular phones disclosed by Frerichs), as it was known that such cellular phones could output streaming media files.

44. Dr. Malek's analysis of Kauffman does not appreciate the teachings of the reference as understood by a POSITA, and his analysis does not affect my

opinion that the teachings of Kauffman, when combined with Frerichs and Kawasaki, renders obvious all challenged claims.

45. First, Dr. Malek asserts that “[a]lthough Kauffman caches content while inserting an ad, the device that caches the content is not the device that plays the content.” Ex.2009, ¶48. Dr. Malek also asserts that “Kauffman caches upstream of the end-user device that plays content, so combining Kauffman with Frerichs’ cell phone would not create a combination that cached content on the cell phone.” Ex.2009, ¶170. Dr. Malek supports his opinions by citing Kauffman’s paragraph 3, for example, which states, in part: “play the file on an end-user device, such as through a set-top box on a television or on a computer display device.” Kauffman, ¶3. Dr. Malek also cites Kauffman’s paragraph 17, which states: “receiving multimedia information through either a television 12 (using a set-top box 14 or other appropriate residential gateway device) or a computer terminal 16 (including appropriate software to convert the received files and play them on the display of computer 16).” Kauffman, ¶17.

46. However, Dr. Malek’s analysis does not consider what a POSITA would have appreciated from reviewing Kauffman. For example, while Kauffman refers to playing a file on an end-user device, such as through a set-top box on a television or on a computer display device, the set-top box on a television and computer display device are **examples** of devices (as indicated by the “such as”

language), and a POSITA would have recognized Kauffman to apply to other “end-user device[s].” For example, claim 17 of Kauffman supports that its teachings are applicable to communication devices generally, and its teachings are not limited to the set-top box on a television and computer display device examples. Rather, communication devices include, as a POSITA would have recognized, many computing devices, and further, a POSITA would have recognized a cellular device as a type of computing device (and a type of communication device as well), and thus a POSITA would have recognized Kauffman's teachings to be applicable to cellular devices.

47. Further, although Dr. Malek attempts to distinguish between the set-top box 14 and television in Kauffman, and assert that only set-top box 14 caches content and thus content is not cached at the device that plays content (i.e., the television), a POSITA would not have recognized such a bright-line distinction between the two devices, such that Kauffman's teachings would be inapplicable to a cellular device. This is because, in the example of a set-top box that plays content through a television, the set-top box and television are closely linked: the set-top box contains appropriate hardware/software to receive the content and process it, and outputs it to the television, which is only an output device. Other end-user devices would combine the hardware/software to perform the functionalities of receiving, processing, and outputting content, e.g., a television with additional hardware and

software (i.e., a television that was more than just an output device), or a computing device.

48. In an example of the combined teachings of Frerichs and Kauffman, a POSITA would have recognized Kauffman's teachings of a set-top box coupled to a television to be analogous to device taught by Frerichs containing hardware and software to receive, process, and output audio streaming media, such as a cellular device. And the '414 patent's background acknowledges that the "functionality of cellular telephones has continued to increase" including "advanced features ... such as playing streamed content and broadcasts." Ex.1001, 1:21-47. Thus, for this additional reason, a POSITA would have recognized Kauffman's teachings to be applicable to cellular devices as well, even though (as Dr. Malek alleges) content is cached at a set-top box and not a television. Accordingly, it remains my opinion that, consistent with the analysis I proposed in my first Declaration, that Kauffman's techniques were applicable to Frerichs, and would be understood to teach caching streaming media at a cellular device.

49. Dr. Malek also asserts that any "benefits or expectations of success from combining Kauffman and Frerichs apply, if at all, to client devices that are more powerful than cell phones." Ex.2009, p. 94. Dr. Malek supports this opinion by stating "Lightweight Frerichs clients such as ... cell phones are not suitable for Kauffman, because, for example, they did not play streaming video." Ex.2009, ¶174.

50. However, as I stated in my first Declaration, although Kauffman describes techniques with reference to a “video stream,” a POSITA would have understood it to also be applicable to audio streams, as Kauffman generally relates to “inserting data such as advertising in streaming media” which would be understood to include audio streaming as well. Kauffman, ¶1. Additionally, a POSITA would have recognized that video streaming data is typically of increased complexity as compared to audio streaming data, and thus a POSITA would have recognized Kauffman to teach techniques applicable to audio streaming as well.¹ Finally, Kauffman relates to “streaming multimedia file[s]” and thus, a POSITA would have understood its techniques to be applicable to audio-only streaming applications as well. Kauffman, Abstract.

¹ My statement that video streaming data being of increased complexity as compared to audio streaming data is based on the simple fact that video streaming data includes both video data and audio data that would be output using a display and a speaker (or other audio output device), whereas audio streaming data includes only audio data. Thus, the processing required for video streaming data would be more complex than the processing comparatively required for audio streaming data only.

51. Thus, my analysis was referring to incorporating Kauffman's caching teachings with the audio streaming of Frerichs. Dr. Malek's analysis does not challenge that Kauffman's teachings would be applicable to audio streaming. Further, my analysis did not suggest importing Kauffman's entire caching inserter into a cellular device as taught by Frerichs or requiring Frerichs to display video. This is because I have been informed and understand that obviousness does not require physical combination/bodily incorporation, but rather consideration of what the combined teachings would have suggested to persons of ordinary skill in the art at the time of the alleged invention. Thus, Dr. Malek's statement that "[a] POSITA would not substitute a 2001-era cellular phone for a set-top box and attempt to insert the caching inserter into a cellular phone" does not change my analysis, stated in my first Declaration, that a POSITA would have applied "Kauffman's **teachings** of recording streaming content while outputting an advertisement in place of the streaming content with Frerichs' **teachings** of providing streaming media content and advertising content to a customer." Ex. 1003, ¶76 (emphasis added).

52. Dr. Malek also asserts that there would not be a motivation to combine Frerichs with Kauffman because "[t]here is no motivation to combine with Frerichs with Kauffman to avoid network delays." Ex.2009, ¶165. I disagree with his analysis.

53. First, Dr. Malek asserts that Kauffman causes network delay, because there are two network connections: one from the streaming media server to the caching inserter, and a second from the caching inserter to the end-user devices. *See* Ex.2009, ¶¶166-169. However, in the proposed combination of teachings of Kauffman and Frerichs, there are not two network connections as alleged, because the caching inserter is a component of the end-user device. Thus, Dr. Malek's analysis does not affect my opinion that a POSITA would have combined the teachings of Kauffman with those of Frerichs.

54. Dr. Malek acknowledges this analysis ("Petitioner proposes a hypothetical combination: Kauffman's caching inserter inside Frerichs' clients that play content."). Ex.2009, ¶170. In attacking the analysis, however, he reiterates his argument that "Kauffman caches upstream of the end-user device that plays content" (Ex.2009, ¶¶171-173), which I do not agree with, for the reasons set forth above: a POSITA would have recognized that the caching inserter would be within the end-user device that outputs streaming media content. Thus, Dr. Malek's statement that "even in a hypothetical combination of Kauffman with a cell phone, the caching would take place upstream of the cell phone" is not accurate. In the combined teachings of Kauffman and Frerichs, the cell phone that is taught by Frerichs as receiving and outputting streaming media, is combined with the teachings of caching streaming media at an end-user device of Kauffman, which a POSITA would have

recognized as rendering obvious a cell phone that receives, caches, and outputs streaming media, consistent with the '414 patent's challenged claims.

55. Aside from this attack, Dr. Malek does not address the analysis in my first Declaration, that a POSITA “would have also recognized that caching paused streaming media content during the playback of an advertisement, as taught by Kauffman, would have been advantageous. Implementing the teachings of Kauffman would allow the paused content to be immediately resumed after the end of the advertisement's playback by playing the content from the cache, without further delay caused by retrieval of the streaming media content.” Ex.1003, ¶80. This is supported by the knowledge in the art, as I previously stated, because it would have been consistent with a POSITA's knowledge of similar caching and pre-loading techniques known in the relevant art, which explicitly touted advantages of improving response time to a user, such as the Berger reference.

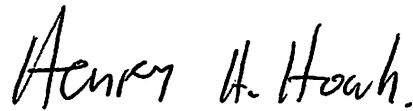
56. Thus, it remains my opinion that a POSITA would have combined the teachings of Frerichs with those of Kauffman for the reasons stated in my first Declaration.

IV. CONCLUSION

57. I hereby declare under penalty of perjury under the laws of the United States of America that the foregoing is true and correct, and that all statements made of my own knowledge are true and that all statements made on information and belief are believed to be true. I understand that willful false statements are punishable by fine or imprisonment or both. *See* 18 U.S.C. § 1001.

Date: December 8, 2023

Respectfully submitted,

A handwritten signature in black ink that reads "Henry H. Houh". The signature is written in a cursive, slightly slanted style.

Henry H. Houh