

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

GOOGLE LLC,
Petitioner,

v.

138 EAST LCD ADVANCEMENTS LIMITED,
Patent Owner.

Case No. IPR2024-00959

U.S. Patent No. 7,428,082

DECLARATION OF NIKOLAOS PAPANIKOLOPOULOS, PH.D.

I, Nikolaos Papanikolopoulos, of Minneapolis, Minnesota, declare that:

I. ASSIGNMENT

1. I have been retained by Robins Kaplan LLP on behalf of 138 East LCD Advancements Ltd. (“138 East”) as an expert with regard to this matter. I understand that the Patent Trial and Appeal Board (“Board”) has instituted *inter partes* review (IPR) of U.S. Pat. No. 7,428,082 (“the ’082 patent”) (Ex. 1001) in response to a request by Petitioner Google LLC (“Google” or “Petitioner”).

2. In my capacity as an expert, I have been asked to provide my independent analysis and opinions regarding the ’082 patent, the prosecution history of the ’082 patent and related applications as applicable, the alleged prior art relied upon by Petitioner, the meaning of various claim terms from the ’082 patent from the perspective of a person of ordinary skill in the art (“POSITA”), and the opinions offered by Petitioner’s expert, Dr. Robert Stevenson, in his declaration (“Stevenson Declaration,” Ex. 1003). My opinions and conclusions are fully discussed in later sections of this declaration.

3. I am an independent consultant, and I am not, and have never been, an employee of 138 East or Google. I received no compensation for this declaration beyond my normal hourly compensation (\$450) based on my time spent analyzing the ’082 patent, the prosecution history of the ’082 patent and related applications,

the prior art publications relied upon by Petitioner, the Stevenson Declaration, and other related materials. I will not receive any added compensation based on the outcome of any IPR or other proceedings involving the '082 patent.

4. This declaration and my opinions are in support of Patent Owner's Response, and I understand that the content of this declaration may be expressed and reproduced in the POR.

II. BACKGROUND AND QUALIFICATIONS

5. I am the McKnight Presidential Endowed Professor and Distinguished McKnight University Professor in the Department of Computer Science and Engineering of the University of Minnesota in Minneapolis, Minnesota. I am also the Director for the Minnesota Robotics Institute.

6. I have been retained as an expert in the fields of image processing/computer vision, sensing, and related technologies. I am being compensated at my normal consulting rate of \$450 per hour. My compensation is not dependent on and in no way affects the substance of my statements in this declaration.

7. I have been a professor at the University of Minnesota (originally as an assistant professor, and then as an associate professor) since the Fall 1992. Between Fall 2001 and Spring 2004, and between Fall 2010 and Spring 2013, I

was the Director of Undergraduate Studies of the Department of Computer Science and Engineering.

8. In 1992, I received my Ph.D. in Electrical and Computer Engineering from Carnegie Mellon University. My thesis was entitled “Controlled Active Vision” and focused on using computer vision in a controlled fashion to detect, track, and manipulate objects in the environment. In 1988, I also received my M.S. in Electrical and Computer Engineering from Carnegie Mellon University. My B.S. in Electrical Engineering was received in 1987 from the National Technical University in Athens, Greece.

9. For over thirty years, my research and teaching work has focused on image processing, computer vision, intelligent transportation systems, and robotics. This research has included detection and tracking of humans and objects such as faces using information from stationary or moving cameras. It has also included main object detection and recognition including work with artificial intelligence and pattern recognition systems for surveillance applications.

10. I currently teach or have been teaching three courses related to image processing and computer vision: (i) CSci 5561 Computer Vision, (ii) CSci 5511 Artificial Intelligence, and (iii) CSci 5551 Introduction to Intelligent Robotic Systems. In particular, I have been teaching the class in Computer Vision since 1992.

11. I am currently serving as a Senior Editor in the IEEE Transactions on Intelligent Transportation Systems with responsibility in the area of imaging. I was Associate Editor in the same journal for twelve years.

12. I have received research grants for various projects involving computer vision and image processing as applied to medicine and surveillance, including face detection and tracking of humans. My industrial experience includes founding a robotics company in 2005 named ReconRobotics Inc. that develops different robotic platforms. I have also been a consultant since 1997 for numerous companies and provided technical expertise in developing computer vision algorithms for human tracking, object recognition, fingerprint recognition, vehicle tracking, camera calibration, inspection, and precision agriculture. In one of my consulting assignments, I had to develop computer vision algorithms for inspection of industrial parts by using different illumination sources (Banner Engineering). I have licensed my algorithms to several industries with the most recent one being Sentra Inc., which is using image processing and image segmentation for precision agriculture.

13. My research has produced more than 380 journal and conference publications. More than 90 publications are in refereed journals including top journals in imaging such as IEEE Trans. on Pattern Analysis and Machine Intelligence, IEEE Trans. on Image Processing, and International Journal of

Computer Vision. Many of my publications and research grants relate to human detection and tracking systems. Some examples include:

Walczak, N., Fasching, J., Cullen, K., Morellas, V., and Papanikolopoulos, N.P., “Toward Identifying Behavioral Risk Markers for Mental Health Disorders: An Assistive System for Monitoring Children’s Movements in a Preschool Classroom,” *Machine Vision and Applications*, Volume 29, No. 4, May 2018, PP. 703-717.

Cook, D., Morris, T., Morellas, V., and Papanikolopoulos, N., “An Automated System for Persistent Real-Time Truck Parking Detection and Information Dissemination,” *Proceedings of the 2014 IEEE Int. Conference on Robotics and Automation*, Hong Kong, China, May 31 – June 7, 2014, PP. 3989-3994.

Somasundaram, G., Sivalingam, R., Morellas, V., and Papanikolopoulos, N.P., “Classification and Counting of Composite Objects in Traffic Scenes Using Global and Local Image Analysis”, *IEEE Trans. on Intelligent Transportation Systems*, Volume 14, No. 1, March 2013, PP. 69-81.

Veeraraghavan, H., Atev, S., Bird, N., Schrater, P., and Papanikolopoulos, N., “Driver Activity Monitoring through Supervised and Unsupervised Learning,” *Proceedings of the IEEE 8th Int. Conf. on Intelligent Transportation Systems (ITSC 2005)*, PP. 895-900, Vienna, Austria, September, 2005.

Wahlstrom, E., Masoud, O., and Papanikolopoulos, N., “Vision-based Methods for Driver Monitoring,” *Proceedings of the IEEE 6th Int. Conf. on Intelligent Transportation Systems (ITSC 2003)*, PP. 903-908, Shanghai, China, October 12-15, 2003.

Masoud, O., and Papanikolopoulos, N.P., “A Novel Method for Tracking and Counting Pedestrians in Real-time Using a Single Camera,” *IEEE Trans. on Vehicular Technology*, Volume 50, No. 5, September 2001, PP. 1267-1278.

Singh, S., and Papanikolopoulos, N. P., “Monitoring Driver Fatigue Using Facial Analysis Techniques,” Proceedings of the 1999 IEEE/IEEJ/JSAI International Conference on Intelligent Transportation Systems, PP. 314-318, Tokyo, Japan, October 5-8, 1999.

14. My work in vehicle detection and tracking has focused on using image and video processing techniques, including object detection, tracking, and recognition, to accurately track vehicles in real-time. These algorithms have been applied to different scenarios, such as urban traffic monitoring and surveillance. Moreover, machine learning techniques have helped in the improvement of these methodologies.

15. My paper “Detection and Classification of Vehicles,” published in the IEEE Transactions on Intelligent Transportation Systems in March 2002, is one of the most cited papers in the history of this journal (more than one-thousand citations). The paper, among other contributions, shows how to segment the main object from videos and images in low-light conditions. I also have nine patents in pertinent areas. One of them is the “Crowd Counting and Monitoring” with P. Kilambi and O. Masoud. It discloses a system and method for accurately estimating the number of people in a crowded area and monitoring their behavior.

The invention utilizes computer vision techniques and machine learning algorithms to analyze video feeds from cameras overlooking the target area. It employs techniques such as background subtraction, main object detection, and tracking to identify individual people within the crowd.

16. Our research work has been funded by several government funding agencies. For example, we have received funding from the Department of Homeland Security to monitor threats at Mass Transit Sites like the 30th Street Station in Philadelphia, PA, and the Light Rail Station in the Minneapolis-Saint Paul International Airport. Tracking humans was an essential task for which we developed a variety of image processing algorithms and tools.

17. I have received numerous honors and awards for my research and contributions. I have been a Distinguished McKnight University Professor at the University of Minnesota since 2007 and have been a McKnight Presidential Endowed Professor in Computer Science since 2016. Also in 2007, I was nominated and became an IEEE Fellow. In 2016, I received the IEEE RAS George Saridis Leadership Award in Robotics and Automation as well as the Center for Transportation Studies Research Partnership Award. I have also received the IEEE VTS 2001 Best Land Transportation Paper Award for the paper “A Novel Method for Tracking and Counting Pedestrians in Real-Time Using a Single Camera” (with Osama Masoud).

18. As a result of my work and research, I am familiar with the design, operation, and functionality of systems such as those described in the '082 patent.

19. Further details regarding my employment and academic history are included in my curriculum vitae, submitted as Exhibit 2002.

III. LEVEL OF SKILL IN THE ART AND BASIS FOR OPINIONS

20. Dr. Stevenson contends that a POSITA in the field of the '082 patent would have “a bachelor’s degree in electrical engineering, computer science, or related disciplines, and two years of experience in digital image processing. Relevant work experience can substitute for formal education and additional education could substitute for work experience.” Ex. 1003, ¶ 60. I understand that Petitioner has adopted that definition of a POSITA. Petition at 5. For purposes of this Declaration, I do not dispute the level of skill for a POSITA as set forth by Dr. Stevenson and adopted by Petitioner.

21. I do note, however, that Petitioner’s proposed level of skill in the art seems low, based on my experience. According to Petitioner’s definition, for example, a POSITA might not have a college degree at all, if they had work experience beyond the “two years” in Petitioner’s definition, because—according to Petitioner—“work experience can substitute for formal education.”

22. Based on my experience and record of accomplishments, I am

qualified to render opinions regarding the technology claimed and described in the '082 patent. Based on my expertise and qualifications, I am qualified to provide an opinion as to what a POSITA would have understood, known, or concluded as of approximately 2002.

23. In reaching my opinions and conclusions, I have relied upon my education, my work experience in the relevant field, and my training, and considered and relied upon my review and analysis of the Petition and all Exhibits.

IV. RELEVANT LEGAL PRINCIPLES

24. For the purposes of this declaration, I have been informed about certain aspects of the law that are relevant to my analysis and opinions. I have applied these legal principles in rendering my opinions below.

A. Claim Construction

25. I understand that the ordinary and customary meaning of a claim term is the meaning that the term would have to a POSITA at the time of the invention.

26. In the absence of an express intent on the part of the inventor to give a special meaning to the claim terms, the words are presumed to take on the ordinary and customary meanings attributed to them by a POSITA.

27. I understand that it is the use of the words in the context of the written description, and as customarily used by those skilled in the relevant art, that

accurately reflects both the ordinary and the customary meaning of the terms in the claims.

28. I understand that the basis for a term's ordinary and customary meaning may be derived from a variety of sources, including the words of the claims themselves, the remainder of the specification, the prosecution history, and extrinsic evidence concerning relevant scientific principles, the meaning of technical terms, and the state of the art at the time of the invention.

29. I have been instructed that dictionary definitions or definitions from technical references can be used to inform or confirm the ordinary and customary meaning of words found in a claim, but that in construing claim terms, the general meanings gleaned from reference sources, such as dictionaries, must always be compared against the use of the terms in the context of the claim itself.

30. I understand that a patent applicant is entitled to be his or her own lexicographer (in other words, provide his or her own meaning to a word or phrase) and may rebut the presumption that claim terms are to be given their plain and ordinary meaning. To do so, the applicant must clearly set forth a definition of the term that is different from its ordinary and customary meaning. Where the applicant provides an explicit definition for a term, that definition will control interpretation of the term as it is used in the claim in which it appears. I understand that the specification can also be relied on for more than just explicit lexicography

to determine the meaning of a claim term. For example, I understand that the meaning of a particular claim term may also be determined by implication, that is, according to the usage of the term in the context of the specification.

B. Anticipation

31. I understand that under U.S. Patent Law, 35 U.S.C. § 102, a claim is invalid as anticipated if all elements of the claims are disclosed, expressly or by necessary implication, in a single publication that qualifies as “prior art” to the patent in question and in a way that enables a person having ordinary skill in the art to make and use the invention.

32. I understand that a prior art reference describes the claimed invention if it either expressly or inherently describes each and every feature set forth in the claim; that is, in determining whether a single prior art reference anticipates a patent claim, one should take into consideration not only what is expressly disclosed in that reference, but also what is inherently present as a natural result of the practice of the system or method disclosed in that reference.

33. I understand that to establish inherency, the evidence must make clear that the missing descriptive matter is necessarily present in the item of prior art and that it would be so recognized by a person having ordinary skill in the art.

C. Obviousness

34. I understand that under U.S. patent law, 35 U.S.C. § 103, a claim is invalid as obvious if the differences sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains.

35. I am informed that an obviousness analysis requires an assessment of the scope and content of the prior art, the differences between the art and the claims at issue, and the level of ordinary skill in the art. I am told that it is against this backdrop that obviousness is assessed.

36. I am informed that a POSITA is a hypothetical person who is presumed to be aware of all the pertinent prior art. I am also informed that an obviousness analysis may take account of the inferences and creative steps that a POSITA would employ.

V. BACKGROUND OF THE '082 PATENT

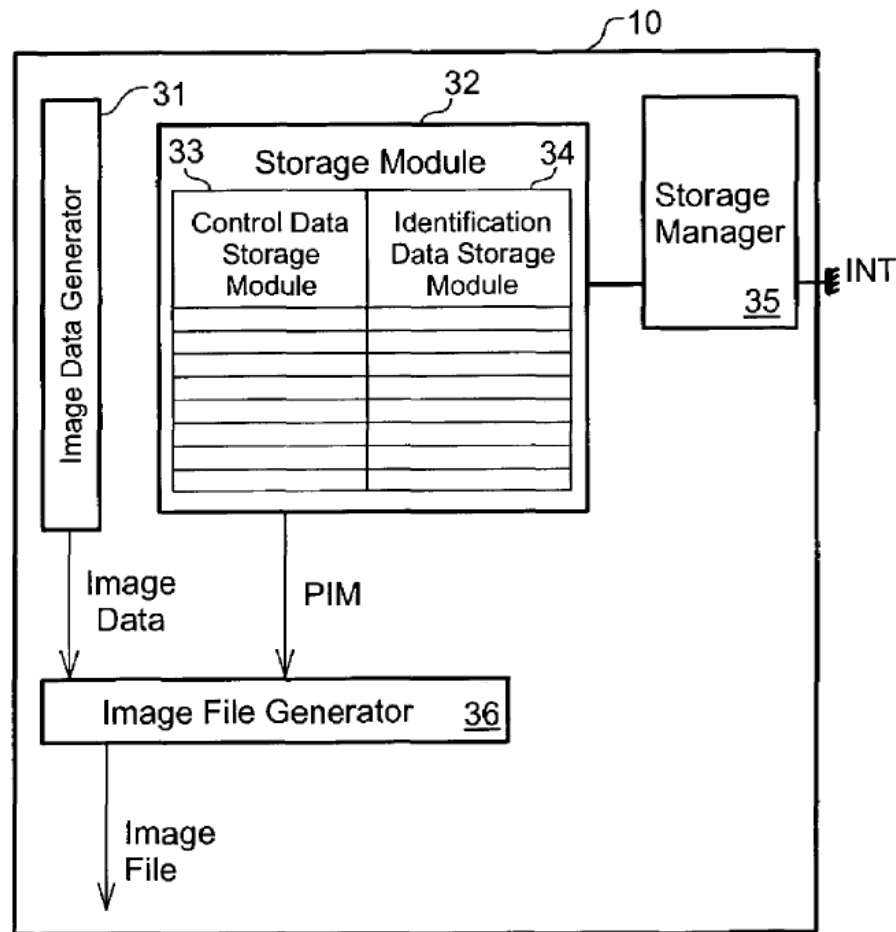
A. '082 Patent Overview

37. The '082 patent claims improvements in processing digital image data to achieve desired visual characteristics. In particular, the '082 claimed inventions improve the way that image generators, such as digital cameras, (1) generate and

store digital image-related data that includes image data and image processing control data (for example, a set of parameters used to control an image processing mode, e.g., “sunset” (Ex. 1001, 8:66-9:2, Fig. 7), and specification data identifying the image processing mode and control data (*id.*, 5:58-65, 6:28-30)); and (2) update the control data in the system, for example, to implement new image processing modes that modify the image data in different ways. *Id.*, 1:44-2:9.

38. Instead of attaching the control data to the image as in prior image generators (*id.*, 1:24-30), the claimed image generator includes a control data storage module that stores image processing control data, including specification data and control data, separate from the image data. *Id.*, 1:24-30. The '082 patent improves upon prior image generators, enabling relating the image data to detached control data and updating the control data with new data corresponding to selected specification data. Compared to those prior art systems, the methods and systems claimed by the '082 patent reduce the resources required to perform digital image data processing to achieve the user's desired visual characteristics, and increase the functionality of image generators by providing new or improved image processing modes.

39. Figure 3 illustrates the structure of the image-related-data generator (the digital camera, e.g.):



Ex. 1001, Fig. 3.

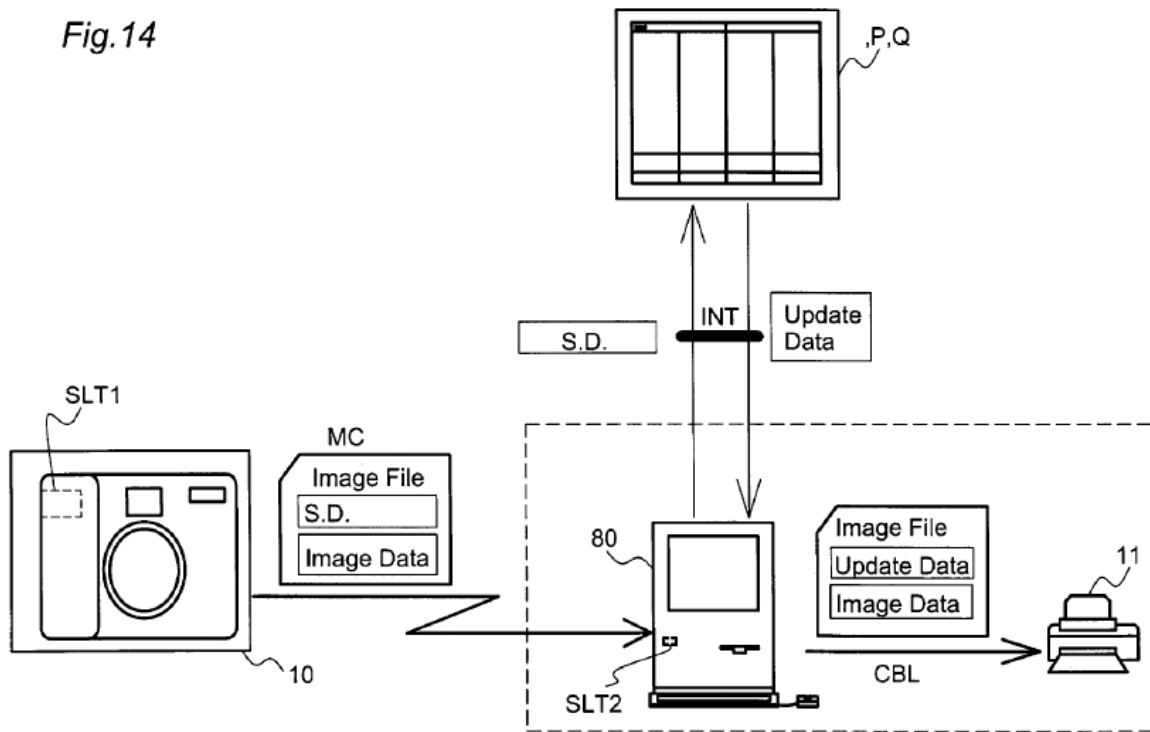
40. According to the patent, the “control data storage module 33” stores the image processing control data, which are “PIMs” (Print Image Matching) in preferred embodiments. *Id.*, 7:27. Because PIMs are “pre-stored in the DSC” (*id.*, 5:64), the image generating system need not attach the control data to the image data (unlike prior systems). Instead, the “image file generator” acts as a relating module, relating image data and control data. *Id.* at 7:29-32.

41. More specifically, the illustrated “storage manager” “manages the

PIMs stored in the control data storage module 33 by storing update data.” *Id.*, 7:34-35. The storage manager is responsible for retrieving update data when requested. *Id.*, 7:37-39. The storage manager therefore improves upon how a conventional image generator operates and handles image data and control data by updating specific control data in the control data storage module based on specification data that references that control data. The claimed modules provide specific improvements over prior image generators by creating a novel image-related-data generator having a unique structure including a control data storage module, a relating module, and a storage manager that improves the manner by which image generators store and retrieve image data and control data.

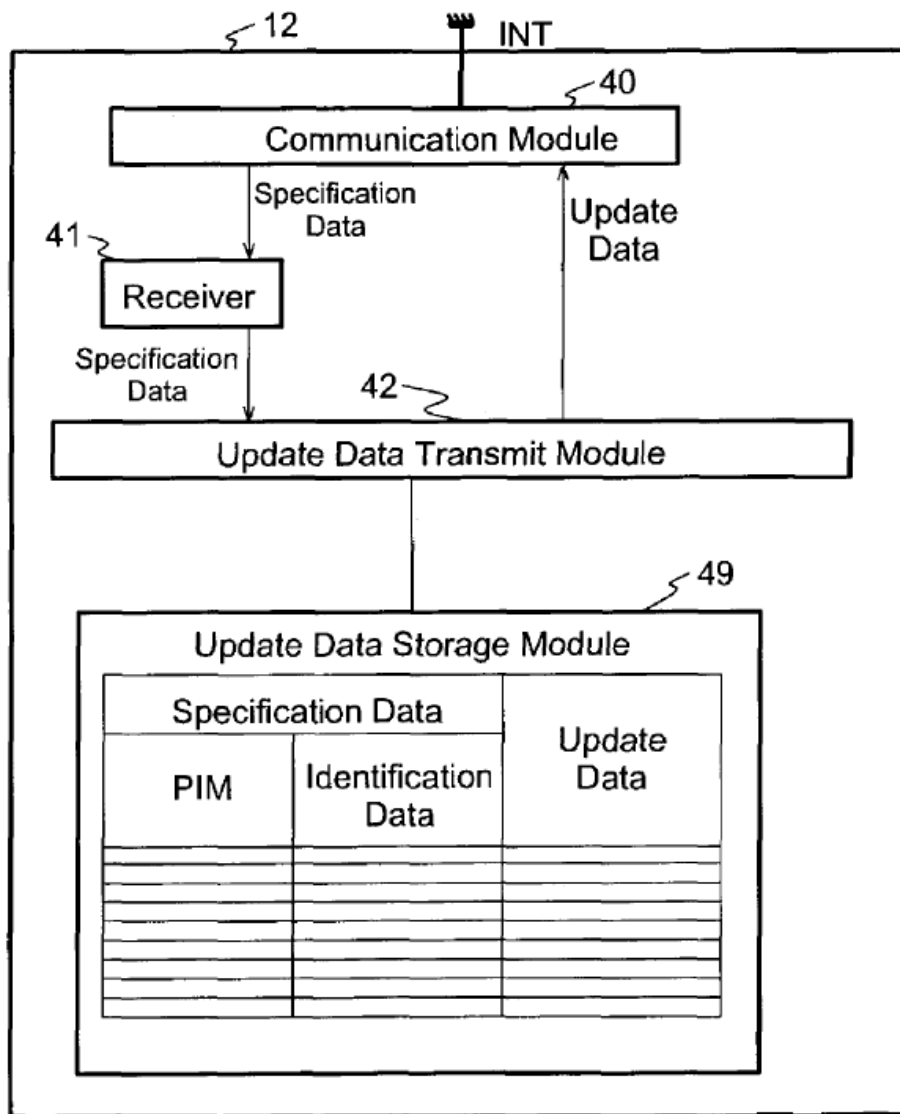
42. Claim 1 of the ’082 patent recites how to achieve these improvements by providing a new storage structure that separates the image processing control data from the image data, distributes control data updates to a storage module, and relates the image data to the image processing control data in a separate image file generator or “relating module.”

43. The ’082 patent describes a further embodiment in which a personal computer communicates with the update data server and acts as an image related data editor. *Id.*, 12:60-64. Figure 14 illustrates the image related data editor described and claimed:

Fig.14

Ex. 1001, Fig. 14.

44. Claims 8 and 9 of the '082 patent are directed to the update data server, which provides the update data to the DSC in response to specification data received by the receiver through the communication module. The server is illustrated at Figure 4:



Ex. 1001, Fig. 4.

45. Claim 10 of the '082 patent recites how to achieve the improvements described above by providing a new, unconventional storage structure that separates the image processing control data from the image data, distributes control data updates to a storage module, and relates the image data to the image processing control data in a separate image file generator or "relating module."

B. Related District Court Litigation

46. I am aware of a related District Court case involving the same parties, and where the '082 patent was asserted but the infringement claims were voluntarily dismissed without prejudice.

VI. ANALYSIS OF THE COMBINATION OF KUWATA WITH FISHER (GROUND 1)

A. Overview of Kuwata

47. U.S. Pat. Appl. No. 2002/0030833 to Kuwata (“Kuwata”) is primarily directed to processing image data to obtain an optimal output in view of a chosen output device, such as a printer. Ex. 1005, ¶ [0014]. Kuwata teaches an image file (“GF”) that contains both image data (“GD”) and output control information (“CI”). *Id.*, ¶ [0066]. According to Kuwata, the output control information “specifies the image output conditions and image output status for an output device so as to be able to obtain the optimal image output results,” e.g., for a selected camera and printer. *Id.*, ¶ [0067].

48. According to Kuwata, output conditions are “set by the user on [the] digital still camera.” *Id.*, ¶ [0082]. Kuwata provides several specific examples of output conditions, including “output conditions to match the output device that outputs the image data GD in an image file GF, output conditions optimized for each manufacturer of printer or for each equipment type of printer, or it can be

general use output conditions that are used fairly often, such as bright, sharp, etc.” *Id.*, ¶ [0089]. Kuwata explains that “[t]his information (conditions) is set by a user selecting from choices prepared in advance, and there is no requirement for the user to make fine settings.”

49. According to Kuwata, therefore, output conditions are set by the camera user in advance, on the camera itself, according to choices presented to the user representing, e.g., particular camera/printer pairs. Kuwata further discloses output control information stored on the camera that describes output characteristics for multiple output devices, providing the flexibility to pair the camera and obtain optimal imaging results with multiple printers, e.g. *Id.*, ¶ [0075].

50. Although the user sets the output conditions on the camera, Kuwata explains that “DSC manufacturers are best suited to identify the optimal processing settings by observing the results of the DSC when used with a particular printer.” *Id.*, ¶ [0075]. According to Kuwata, “[t]his identification of what combination of DSC parameters and printer parameters is largely found through a trial and error process” performed by the DSC manufacturer. *Id.* In particular, an advantage of providing output device-specific control information in the image file on the DSC is that “the DSC manufacturer goes through the laborious process of identifying the optimum combination of operational characteristics of a DSC-printer pair, and memorizes the characteristics in memory, for later retrieval when the photographer

identifies the target printer to be used for printing.” *Id.*, ¶ [0077]. Kuwata further explains that “the DSC vendor does the matching once, so thousands of DSC photographers never have to do it, yet the photographers can be guaranteed that the results will be optimal for the DSC-printer pair.” *Id.*

51. Unlike the ’082 patent, therefore, Kuwata discloses a self-contained camera system that does not connect to the Internet or download information from any kind of central server; neither “server” nor “Internet” appears anywhere in Kuwata’s disclosure. Kuwata discloses a camera having a standard I/O port, but nowhere discloses downloading any information to the camera; only upload is described, such as sending an image from the camera to a printer. Further, while Kuwata describes “control information CI” that can be combined with “image data GD” and used for image processing, Kuwata nowhere discloses downloading or obtaining the control information from any external source. To the contrary, Kuwata is primarily concerned with providing a self-contained system in which a camera can be optimally paired with multiple output devices based on the trial-and-error work of the camera manufacturer, who tests the camera with various output devices and stores the optimal mappings on the camera in advance so that users do not have to figure out the mappings themselves.

B. Overview of Fisher

52. U.S. Pat. Appl. No. 2001/0025303 to Fisher (“Fisher”) is primarily directed to storing and using so-called “ancillary” data files for an electronic camera device in an effort to implement more efficient methods for accessing and utilizing information. Ex. 1006, ¶ [0008]. According to Fisher, managing information on electronic devices may “create substantial challenges for system designers,” as “demands for increased device functionality and performance may require more system processing power and require additional hardware resources.” *Id.*, ¶ [0005]. Fisher particularly notes that digital imaging devices in particular “may benefit from an efficient implementation because of the large amount and complexity of the digital data involved.” *Id.*, ¶ [0006].

53. To address these problems with memory and scalability, Fisher teaches downloading ancillary data files from the Internet or other data source, which are stored in a memory area on the camera following download. Ex. 1006, ¶ [0031]. According to Fisher, these ancillary data files may contain “any appropriate information, data, or instructions to facilitate successful operation of camera device,” and in particular may include “various types of information for combining with image data that is captured by camera device 110 to thereby produce composite images.” *Id.*, ¶ [0034].

54. Unlike the '082 patent, therefore, which is directed to particular structures on both the DSC side and server side that improve on prior systems that required control data to be attached to image data, Fisher describes a general client/server relationship in which generic “ancillary data files” are stored at a server and downloaded by a camera or similar device only as needed, so as to reduce memory requirements and improve scalability.

C. The teachings of Kuwata in view of Fisher do not satisfy all elements of any of claims 1 or 10.

1. Claim 1

55. I disagree with Dr. Stevenson that Kuwata in view of Fisher teaches all limitations of claim 1. In particular, I disagree with Dr. Stevenson that Kuwata in view of Fisher discloses claim element [1d], “a storage manager configured to update at least a part of the image processing control data stored in the control data storage, based on specification data, which specifies the image processing control data to be updated.”

56. First, I disagree with Dr. Stevenson that a POSITA would have understood Fisher to teach updating image processing control data “based on specification data, which specifies the image processing control data to be updated.” Dr. Stevenson opines that Fisher’s ancillary data module 416 “downloads an ancillary data file from the Internet server based on specification

data, such as a ‘descriptor’ that is associated with a ‘respective set of data,’ that corresponds to the user’s selection,” citing Fisher ¶¶ [0010], [0023], [0049], and [0053] for support. Ex. 1003, ¶ 104. I disagree with Dr. Stevenson. Fisher nowhere teaches an ancillary data module that downloads ancillary data files from the Internet based on descriptors, and Dr. Stevenson’s cited paragraphs of Fisher provide no support for his opinion. I analyze each of Dr. Stevenson’s cited paragraphs of Fisher below, explaining why they fail to provide the teachings that Dr. Stevenson alleges.

- At ¶ [0010], Fisher explains in very general terms that “camera device may perform various on-line management procedures with the ancillary data files by means of [a] previously-established electronic communication path.” Fisher further describes “a download manager from the ancillary data module of the camera device [that] may advantageously select and download one or more of the ancillary data files from [a] data source,” but Fisher does not describe any relationship between the download manager or downloaded file and a descriptor. Fisher does not mention “descriptors” at all here.
- At ¶ [0023], Fisher gives examples of ancillary data files (“image template files, text overlay files, image background files, and special

program instruction files”) and describes a data source for storing the files, but does so in very general terms. Fisher also explains that the camera “may preferably then utilize an ancillary data module to access, select, and download the ancillary data files from the data source,” but again does not refer to “descriptors” in relation to these downloads; Fisher does not mention “descriptors” at all here.

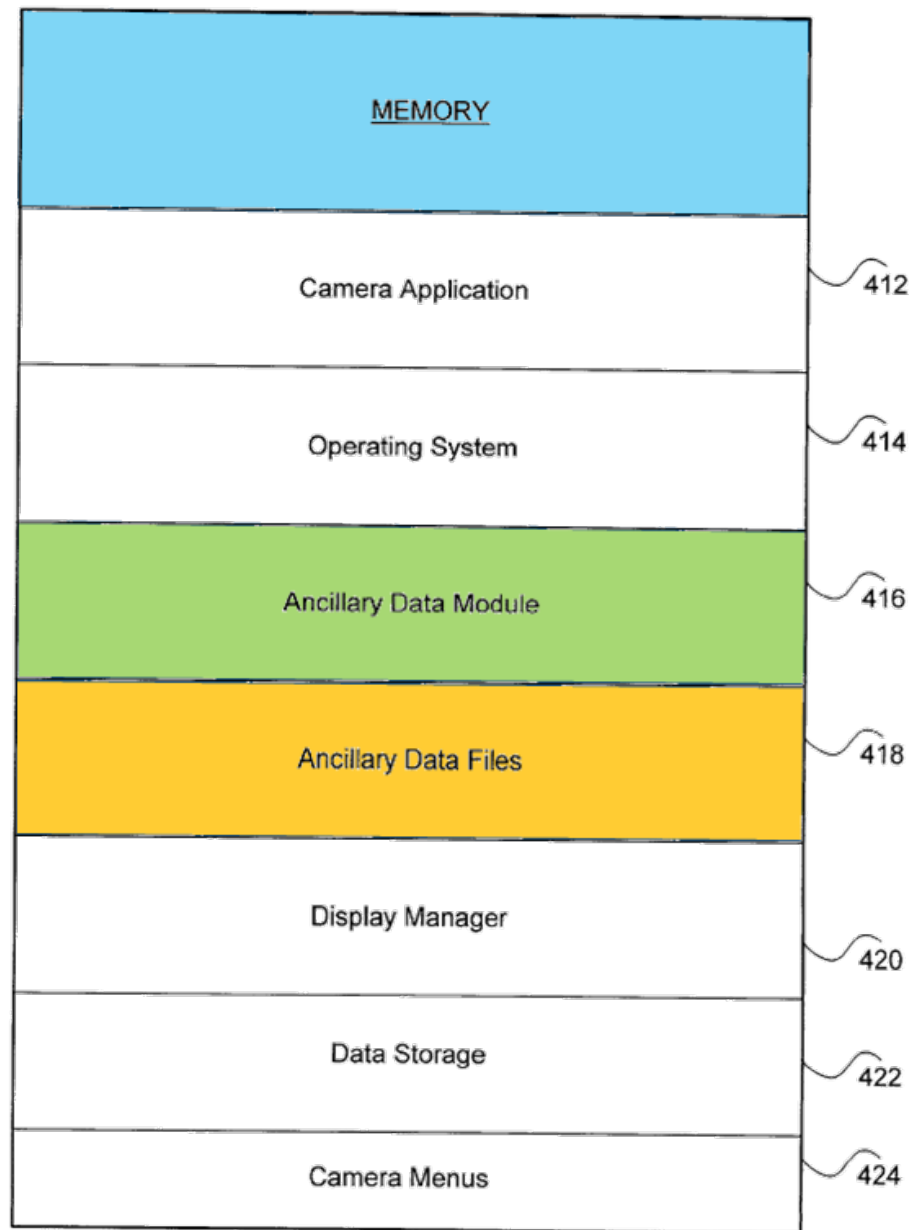
- At ¶ [0049], Fisher notes that ancillary data files “may preferably also include a descriptor 1 (**712(a)**) through a descriptor N (**712(c)**) that are each preferably associated with a different respective set of data **714**,” but Fisher says nothing here about downloading ancillary data files. Instead, he is describing Figure 7, which shows only how the ancillary data files are stored on the camera (as illustrated by box 418 in Figure 4, which corresponds to Figure 7) and does not teach or suggest anything about how to download the ancillary data files from a server, let alone using descriptors to do so.
- At ¶ [0053], Fisher explains the descriptors in more detail, teaching that they “may include any appropriate information related to a corresponding set of data 714” and providing examples. Fisher also notes that its ancillary data module “may advantageously analyze

downloaded ancillary data files 418 using descriptors 712 and other means to thereby update camera menus 424, and otherwise provide current information to a system user for effectively utilizing the ancillary data files 418,” but Fisher again does not teach using the descriptors in any way to download ancillary data files. To the contrary, Fisher makes clear that the ancillary data files are already downloaded when this analysis occurs.

57. As I describe and illustrate above, therefore, Fisher nowhere teaches descriptors in the context of downloading ancillary data files. Those teachings are completely separate: Fisher teaches “descriptors” as each “preferably associated with a different respective set of data,” independent of downloading ancillary data files (¶ [0049], e.g.); and Fisher teaches managing downloads with the download manager, independent of descriptors (¶ [0023], e.g.).

58. More broadly, in my opinion, a POSITA reading Fisher would not have understood the reference to teach any association between descriptors and downloading data from the Internet or any other external server. A POSITA reading Fisher therefore would not have understood the reference to teach or suggest using descriptors to determine what ancillary data should be updated, as the claim requires. According to Fisher’s teachings, for example, the descriptors are stored completely separate from the download manager that coordinates

downloading of ancillary data files. I have illustrated this separation in the annotated Figure 4, which shows how memory is allocated to different blocks or functions in Fisher's camera. Fisher's download manager, which coordinate[s] "the accessing, selecting, downloading, analyzing, and storing of various types of ancillary data files 418 from any appropriate data source," resides in the Ancillary Data Module 416 (as shown in Figure 5). Fisher's descriptors, on the other hand, reside in the Ancillary Data Files block 418 (as shown in Figure 7).

346**Fig. 4**

59. Fisher does not teach or otherwise suggest any overlap or cross-purpose between the descriptors and downloading ancillary data files. I therefore disagree with Dr. Stevenson that Fisher teaches an ancillary data module 416 that

“downloads an ancillary data file from the Internet server based on specification data, such as a ‘descriptor’ that is associated with a ‘respective set of data,’ that corresponds to the user’s selection,” which is the basis for his argument that the combination of Kuwata and Fisher would have taught this limitation of ’082 patent claim 1.

60. I also disagree with Dr. Stevenson’s opinion that a POSITA “would have found it obvious to implement Fisher’s ancillary data module that updates ancillary data files in the camera’s memory based on specification data that specifies new or updated ancillary data files to download in Kuwata’s camera.” Ex. 1003 ¶ 105. As I explained immediately above, I disagree that a POSITA would have understood Fisher to teach an “ancillary data module that updates ancillary data files in the camera’s memory based on specification data that specifies new or updated ancillary data files” in the first place. In my opinion, a POSITA would not have understood Fisher to teach downloading ancillary data files based on specification data at all. As Dr. Stevenson’s premise is flawed, his conclusion cannot follow.

61. I also disagree with Dr. Stevenson’s opinions that a POSITA would have been motivated to combine Kuwata and Fisher.

62. Kuwata emphasizes the advantages of storing all available information about DSC/prINTER pairs directly on the camera. As taught by Kuwata,

“the DSC manufacturer goes through the laborious process of identifying the optimum combination of operational characteristics of a DSC-printer pair,” and stores those characteristics in memory so that they can be retrieved later by the photographer. Ex. 1005, ¶ [0077]. As Kuwata explains, “the DSC vendor does the matching once, so thousands of DSC photographers never have to do it.” *Id.* Kuwata further teaches storing output control information for multiple devices on the camera so that the user does not have to identify or obtain control information for new DSC/printer pairs. *Id.*, ¶ [0075]. Kuwata is therefore directed to enabling standalone printing via direct uploads without external dependencies.

63. Fisher’s teachings point in the opposite direction. Unlike Kuwata, which is concerned with convenience and ease of use for the camera user, Fisher is concerned with scalability of hardware devices. Fisher teaches storing ancillary data at an external server, off the imaging device, for search and download by the user. Storing data off the imaging device saves memory and provides for a more efficient use of hardware resources. Fisher’s teachings are therefore antithetical to Kuwata’s teachings of loading the camera in advance with as much information about camera/printer pairs as possible.

64. A POSITA would not combine Kuwata with Fisher since Kuwata describes a camera system that does not connect to the Internet and avoids reliance on external data sources. Introducing a feature from Fisher to Kuwata would

fundamentally contradict the self-contained design principle of Kuwata.

65. Moreover, a POSITA at that time would have faced challenges in adding extra print functionality to Kuwata from external sources, teachings that Fisher does not provide.

66. Printer drivers in 2002 were complex and not always as easy to write as of now. Kuwata, for example, deals with drivers (element S350 in Exhibit 1005, Fig. 10) by having the DSC manufacturer create the drivers for the specific DSC/printer pair. Ex. 1005, ¶ [0077]. A POSITA would have been aware that printer drivers at that time were not typically updated to handle newer camera formats or shooting modes, resulting in challenges in how a POSITA would have translated an image printing task with a particular mode to reality.

67. A POSITA would have also recognized challenges associated with universal drivers, which were intended at least in part to address matching issues with individual drivers. Much of this functionality was developed later, as described, for instance in Hewlett-Packard's HP Universal Print Driver for Windows, version 4, Reviewer/Evaluator's Guide, available at https://h20331.www2.hp.com/Hpsub/downloads/UPD_RG.pdf. A POSITA starting with Kuwata would not have looked to Fisher to get information regarding printer drivers because Fisher provides none of these teachings.

68. I therefore disagree with Dr. Stevenson's opinion that a POSITA

would have found it obvious to implement Fisher's connectivity with a server into Kuwata's camera.

2. Claim 10

69. I also disagree with Dr. Stevenson that Kuwata in view of Fisher teaches claim 10. In particular, I disagree with Dr. Stevenson that Kuwata in view of Fisher discloses claim element [10e], "a memory management module configured to acquire additional image processing control data from an external memory device separate from the digital camera, and to store the additional image processing control data into the control data storage," for reasons similar to those that I discussed for claim element [1d] above.

70. In particular, in my opinion, a POSITA would not have found it obvious in view of Kuwata and Fisher "to acquire additional preset conditions corresponding to different DSC-printer pairs or new modes," as the Petition alleges. Instead, a POSITA would have found Kuwata, which teaches a self-contained camera system with DSC-printer pairs preloaded by the DSC manufacturer, to be incompatible with Fisher, which teaches storing data on an external server to preserve memory and scalability, as I described at ¶¶ 62-64 above. Because Fisher does not remedy the shortcomings of Kuwata, in my opinion, the combination of Kuwata and Fisher fails to teach this claim element.

3. Claims 2, 3, 5, and 6

71. Claims 2, 3, 5, and 6 of the '082 patent each depend from claim 1. I understand that each of these dependent claims therefore includes all of the limitations of claim 1. As I have previously discussed, in my opinion, Kuwata in view of Fisher fails to render obvious claim 1 of the '082 patent; therefore Kuwata in view of Fisher necessarily fails to render obvious claims 2, 3, 5, and 6 as well. All the same, I note several additional points of disagreement I have with Dr. Stevenson with respect to claims 5 and 6.

72. First, with respect to claim element [5b], I disagree with Dr. Stevenson that a POSITA would have found it obvious to modify Kuwata's camera to include Fisher's ancillary data module to update preset conditions based on specification data that identifies the DSC-printer pair to the server. Ex. 1003, ¶ 132. In particular, Dr. Stevenson bases his opinion on his suggestion that "the combined Kuwata-Fisher camera already uses the DSC-printer pair identifier (specification data) to download the corresponding preset conditions." *Id.* But Dr. Stevenson fails to show that the Kuwata-Fisher camera uses specification data to download preset conditions, for the reasons I described at ¶¶ 56-59 above. In particular, in my opinion (and as described in the aforementioned paragraphs), Fisher does not teach specification data that specifies image processing control

data to be updated, as recited in claim 1.

73. Second, with respect to claim element [6b], I disagree with Dr. Stevenson that the combined Kuwata-Fisher camera renders obvious sending specification data to a server and receives back corresponding preset conditions. Ex. 1003, ¶ 134. First, in my opinion, Fisher does not disclose (and therefore the Kuwata-Fisher combination cannot disclose) specification data that specifies image processing control data to be updated, again for the reasons I described at ¶¶ 56-59 above. Further, I see no teaching in Fisher of sending any alleged “specification data” from a camera to another data source. To the extent Dr. Stevenson is assuming that specification data corresponds to Fisher’s “descriptors,” Fisher nowhere discloses sending descriptors off-camera and therefore would not suggest doing so to a POSITA.

VII. ANALYSIS OF THE COMBINATION OF KUWATA, FISHER, AND OHGA (GROUND 2)

A. Overview of Ohga

74. U.S. Patent No. 6,788,305 to Ohga (“Ohga”) is primarily concerned with color matching between an image and a display monitor in a network environment. Ex. 1007, 1:43-45. In particular, Ohga teaches client PCs connected to a network that includes a web server storing an HTML document. The HTML document contains a link to both image data and an input profile—the profile of

the device that inputs the image data—that complies with International Color Consortium (ICC) formats. *Id.*, 3:36-46. The HTML document may also contain a link to a color matching module (CMM) program, which contains code for matching colors between the image data and a desired output source such as a particular monitor connected to the computer. *Id.*, 3:22-28.

75. In my opinion, a POSITA in 2002 would have understood that the International Color Consortium (ICC) and Color Management Modules (CMMs) form the backbone of color management systems. The ICC, established in 1993 by industry leaders, developed the standardized ICC profile format that defines how color information should be interpreted across different devices. These profiles contain detailed color characterization data that describe how a specific device reproduces or captures color relative to a device-independent color space. Color Management Modules (CMMs) are the software components that perform the color transformations based on ICC profiles. When color data (e.g., images) moves between devices (like from a camera to a monitor to a printer), the CMM uses the source and destination ICC profiles to calculate the necessary color transformations. Different CMMs may use slightly different algorithms for these calculations, which is why color results can sometimes vary between applications or operating systems even when using the same profiles.

76. The ICC/CMM architecture follows a modular approach where the

ICC establishes the profile format standards, while CMMs implement the color transformation algorithms. However, this architecture is specifically optimized for color transformations and doesn't easily extend to other visual attributes like material properties, transparency, or dynamic lighting effects. The focused nature of ICC profiles—designed exclusively for color space conversions—makes them only effective for their intended purpose and difficult to adapt for applications that require more information than color.

77. The technical foundations of the ICC profile specification present barriers to modification or extension. The binary structure of ICC profiles, with their carefully defined header blocks, tag tables, and transformation matrices, was created for efficient color space transformations rather than generalized data handling. Attempts to repurpose this architecture for other types of visual information would require a fundamental restructuring of the format itself, essentially creating an entirely new standard rather than extending the existing one.

78. This inherent inflexibility reflects the ICC's design philosophy that is built for color. By focusing exclusively on color management, the consortium created a standard that solved an imaging industry problem. However, this same focused approach limited its adaptability to the general needs in visual processing such as material appearance properties, spectral information, or dynamic metadata. Any workflow that requires the representation of imaging features beyond color,

necessitates complex approaches that are outside the ICC effort that remained largely fixed in its original purpose.

79. According to Ohga, the user manually selects an output profile for the monitor; Ohga describes four different methods by which the monitor profile may be obtained by the PC user:

- First, “names or symbols” of monitor profiles stored in the server can be “presented to the user, and the monitor profile selected by the user is downloaded from the server.” Ex. 1007, 3:51-54. In this case, the “profile names presented to the user, and profiles on the server[,] are associated with each other in advance, and when the user selects a given profile name, the corresponding profile on the server is automatically loaded into the CMM program of the client.” *Id.*, 3:54-58. Alternatively, “the CMM program may have a plurality of monitor profiles, and one of them may be selected by the user.” *Id.*, 3:59-61.
- Second, the user may be “prompted to input or designate color space characteristics, i.e., the XYZ values of RGB primary colors, gamma coefficient, and XYZ value of white point, and a monitor profile is created based on these data.” *Id.*, 3:62-65.

- Third, the user may be “prompted to designate a profile stored in the client computer.” *Id.*, 3:66-67.
- And fourth, “[a] monitor profile that defines standard monitor characteristics such as sRGB or the like” may be “used as a default.” *Id.*, 4:1-2.

80. Once the monitor profile is obtained, both the input and output profiles are passed to the CMM program, which executes color matching for the image data based on the input profile and monitor profile. *Id.*, 3:48-4:5.

81. Unlike the '082 patent, therefore, Ohga's system requires the user to manually obtain a monitor output profile prior to processing of the image data by the CMM. Further, Ohga's CMM is a computer program that must take as inputs both the input profile and the output profile before it can process the image data.

B. The teachings of Kuwata in combination with Fisher and Ohga do no satisfy all limitations of claims 1 or 10.

1. Claim 1

82. I disagree with Dr. Stevenson that Kuwata in view of Fisher and Ohga teaches claim 1 of the '082 patent. In particular, I disagree with Dr. Stevenson that Kuwata in view of Fisher and Ohga discloses claim element [1d], “a storage manager configured to update at least a part of the image processing control data stored in the control data storage, based on specification data, which specifies the

image processing control data to be updated.”

83. With regard to claim element [1d], Dr. Stevenson brings in Ohga only for the claim limitation “based on specification data, which specifies the image processing control data to be updated.” Ex. 1003, ¶ 167. Dr. Stevenson alleges that a POSITA would have found this claim limitation obvious in view of Kuwata and Fisher and further in view of Ohga. *Id.* I disagree with Dr. Stevenson. As I previously described, a POSITA would not have found this claim limitation obvious in view of Kuwata and Fisher. Further, as I describe below, Ohga does not teach specification data at all. Therefore, Ohga does not fill in the missing information in the Kuwata/Fisher combination with regard to this claim element.

84. In particular, I disagree with Dr. Stevenson that a POSITA would have understood Ohga to teach “updating . . . image processing control data based on specification data, which specifies the image processing control data to be updated.” In support of his opinion, Dr. Stevenson points to a PC as “the device that executes color matching” and further to a “program that ‘executes color matching for the image data J1 on the basis of the input profile P1 and [the output] profile [P2].’” Ex. 1003 ¶ 168 (bracketed text in original). Dr. Stevenson then points to the input and output profiles as “image processing control data” and to a “designation of the input profile on [] HTML document H1” and to “a given profile name” as “specification data.” *Id.* Dr. Stevenson concludes that “[t]he

specification data corresponding to the designation of the input profile and the output profile name specify the image processing control data to be downloaded.”

I disagree with Dr. Stevenson. In my opinion, he has misidentified the image processing control data, and therefore has misidentified the specification data as well. In my opinion, Ohga fails to teach specification data that specifies image processing control data to be updated, for reasons I discuss below. Because Ohga fails altogether to teach this claim limitation, in my opinion the addition of Ohga to the Kuwata/Fisher combination does not render ’082 patent claim 1 obvious.

85. Dr. Stevenson points in his declaration to two different pieces of data as alleged “specification data”: first, the “designation of the input profile on the HTML document H1,” and second, “a given profile name” associated with an output profile in a list of profile names presented to the user. Ex. 1003, ¶ 168. Dr. Stevenson then concludes that “[t]he specification data corresponding to the designation of the input profile and the output profile name specify the image processing control data to be downloaded.” *Id.*

86. But Dr. Stevenson’s conclusion is incorrect, as he has incorrectly identified “image processing control data.” Dr. Stevenson points to the “input profile P1” as image processing control data (*id.*), but that identification is incorrect at least because the profiles do not actually contain data for controlling image processing. As taught by Ohga, the input profile “is passed as a parameter to

the CMM program,” and the obtained output profile is also “passed to the CMM program.” Ex. 1007, 3:38-41, 3:48-50. Ohga’s CMM program then “executes color matching for the image data J1 on the basis of the input profile P1 and monitor profile.” *Id.*, 3:38-41, 4:3-5. Therefore, to the extent Ohga teaches data or other information that controls image processing, that information is the CMM program itself, which—according to Ohga—contains code (instructions) that performs the actual color matching for the image data. *Id.*, 4:3-5. The input and output profiles are parameters passed into the CMM program. But the profiles cannot be image processing control data, because they do not control image processing. They are simply profiles that describe certain color properties of the input (e.g., imaging) device and output (e.g., monitor) device.

87. Indeed, Ohga explains that “the format of the [input] profile matches or complies with that specified by International Color Consortium (ICC).” Ex. 1007, 3:44-46. An ICC profile is a component used in image processing. It is a set of data that characterizes a color input or output device, or a color space, according to standards set by the International Color Consortium. The primary objective of an ICC profile is to maintain consistent color across different devices and platforms, ensuring that colors are reproduced as accurately as possible. In my opinion, a POSITA would have viewed it as a translator between a device’s color space and a standard color space. An ICC profile typically contains information about the

device's color characteristics, dynamic range, and tone reproduction traits. These profiles are used in digital photography, graphic design, and printing to achieve color consistency from capture to display to final output. They often exist as separate files with .icc or .icm extensions. I have reviewed a 2004 ICC white paper titled "The role of ICC profiles in a colour reproduction system," which I understand has been submitted as evidence in this proceeding. That paper describes many of the same aspects of ICC profiles and CMMs that I have just explained. While that paper was published shortly after the priority date of the '082 patent, based on my experience, it is my opinion that its teachings concerning the fundamental properties of ICC profiles, their purpose, their lack of image processing instructions, and the fundamental role of the CMM in image processing were true and accurate and would have been understood by a POSITA as of the '082 priority date as well.

88. ICC profiles are device-specific. Ohga itself provides this teaching, describing "input profile P1 of the device that inputs the image data J1" (Ex. 1007, 3:12-13, emphasis added) and "a profile of, e.g., a monitor connected to the client computer" (*Id.*, 3:47-48, emphasis added). A POSITA would therefore have understood ICC profiles to describe the color transformation properties of their respective devices, without regard for the instructions that must be executed to properly display image data from an input device on a separate output device. In

my opinion, then, a POSITA would have understood that an input or output profile cannot be “image processing control data” because the information in the profile is independent of the image and does not in any way specify how to process the image data so as to have some different appearance on another device.

89. I also disagree with Dr. Stevenson’s opinion that a POSITA would have had an expectation of success in combining Kuwata and Fisher with Ohga. In particular, I disagree with Dr. Stevenson that “[c]onfiguring the ancillary data module functionality to provide specification data to a server and receive the corresponding preset conditions would have been a straightforward application of known, conventional software operations (network communications) used according to their known functions to yield predictable results (obtaining selected information from a remote server).” Ex. 1003, ¶ 172.

90. In my opinion, a POSITA would not have looked at the Kuwata and Ohga combination since Ohga is dependent on network connectivity to download ancillary data (e.g., color profiles, CMM programs) for display while Kuwata explicitly describes a camera system that does not connect to the Internet and avoids external dependencies. Combining these would fundamentally contradict the Kuwata’s main design philosophy of eliminating reliance on servers or external data sources.

91. In my opinion, a POSITA would have recognized that Ohga’s color-

matching method uses a client-side CMM to reduce server load but risks inconsistent results across clients. The client-side CMM means these color transformations occur on the user's computer rather than the output or server device, allowing for preview accuracy and consistent color handling regardless of the server's or destination device's capabilities. Kuwata focuses on direct uploads to printers without involving servers or client-side processing. In my opinion, a POSITA would have understood that merging these workflows would introduce unnecessary complexity (e.g., managing CMM compatibility) into Kuwata's self-contained system designed for predetermined DSC-printer pairs.

92. Kuwata's camera avoids client-side processing (e.g., no CMM requirement) to ensure consistent output. In my opinion, a POSITA would have understood that incorporating Ohga's client-dependent CMM with into Kuwata would reintroduce the very inconsistencies (e.g., varying color results) that the Kuwata's upload-only approach avoids.

93. A POSITA would have recognized that Ohga solves a different problem than Kuwata (Ohga solves the problem of managing server load and color consistency via client-side CMM downloads). Kuwata focuses on reliability for DSC/printer pairs via self-contained, upload-only design. Combining them at the time of the patent would not have been reasonable and the whole combination as of now seems like hindsight.

2. Claim 10

94. I also disagree with Dr. Stevenson that Kuwata in view of Fisher and Ohga teaches claim 10. In particular, I disagree with Dr. Stevenson that Kuwata in view of Fisher and Ohga discloses claim element [10e], “a memory management module configured to acquire additional image processing control data from an external memory device separate from the digital camera, and to store the additional image processing control data into the control data storage,” for reasons similar to those that I discussed for claim element [1d] above.

95. Dr. Stevenson does not provide any substantive analysis for claim element [10e], instead referring back to “the reasons explained” for Ground 1, the combination of Kuwata with Fisher. Ex. 1003, ¶ 188. As I have already explained at § VI.C.1, Kuwata in view of Fisher does not render obvious this limitation. Dr. Stevenson then states that the Kuwata-Fisher-Ohga combination also renders this element obvious for the reasons he explained for claim element [1d] in Ground 2. *Id.* As I explained above for claim element [1d], however, Ohga does not supply the missing teachings of the Kuwata-Fisher combination. In my opinion, therefore, The Kuwata-Fisher-Ohga combination does not teach at least claim element [10e], and therefore fails to render obvious claim 10.

3. Claims 2-6

96. Claims 2 through 6 of the '082 patent each depend from claim 1. I understand that each of these dependent claims therefore includes all of the limitations of claim 1. As I have previously discussed, in my opinion, the teachings of Kuwata in view of Fisher and Ohga fail to render obvious claim 1 of the '082 patent; therefore Kuwata in view of Fisher and Ohga necessarily fails to render obvious claims 2 through 6 as well.

VIII. ANALYSIS OF THE COMBINATION OF KUWATA AND OHGA AS APPLIED TO CLAIM 7 (GROUND 3)

97. I disagree with Dr. Stevenson that Kuwata in combination with Ohga teaches all limitations of claim 7. In particular, I disagree with Dr. Stevenson that Kuwata in view of Ohga discloses “an update data acquiring module configured to acquire update data of the image processing control data based on the attribute data from the server,” for reasons similar to those I discussed at § VII.B.1 above. Acknowledging that Kuwata does not teach the “update data” or “attribute data” limitations, Dr. Stevenson points to Ohga to remedy these deficiencies. Ex. 1003, ¶¶ 205, 207. But Ohga teaches neither of these limitations.

98. In particular, Dr. Stevenson points to “a profile for each of the input and output devices” as “update data of the image processing control data” and to “the names of the devices” as “attribute data.” *Id.*, ¶ 206. I disagree with Dr.

Stevenson with respect to both of these mappings.

99. First, with regard to “update data of the image processing control data,” Ohga’s input and output profiles are not “image processing control data” because they do not control image processing. Because Ohga’s input and output profiles are not “image processing control data,” they cannot be the claimed “update data” of “image processing control data” either. It should be noted that the “update data” must be update image processing control data.

100. Second, with regard to “attribute data,” claim element [7a] recites “an input module configured to input image data and attribute data related to the image data, the attribute data including at least one of image processing control data to control image processing of the image data and identification data to identify the image processing control data.” Ex. 1001, 15:49-54. The “attribute data” recited here at element [7b] is the same attribute data recited at [7b], and therefore must include “at least one of image processing control data to control image processing of the image data and identification data to identify the image processing control data.”

101. But the “names of the devices,” which Dr. Stevenson identifies as “attribute data,” are neither “image processing control data” nor “identification data to identify the image processing control data.” They are not “image processing control data” because they do not control image processing in any way—they are

simply names. And they are not “identification data to identify the image processing control data” because they identify input and output devices, rather than any data that controls image processing. As I previously discussed, those input and output device profiles are passed as parameters into the CMM program, which performs color matching. But Ohga does not teach using the input or output profiles as means for identifying the CMM program. According to Ohga, the CMM program is manually downloaded by the user, who accesses it via a link in the HTML document on the server. Ex. 1007, Fig 5, 3:22-28. The CMM program is obtained independently of the names of the input and output devices. The “devices’ names” therefore cannot be “attribute data” as claimed, because they are neither “image processing control data,” nor do they “identify image processing control data,” as required of “attribute data.”

102. Because Ohga does not teach the claimed “update data” or “attribute data,” it does not supply the missing teachings of Kuwata, and in my opinion, Kuwata in view of Ohga fails to disclose this claim element. Further, for the reasons I discussed at § VII.B.1 above, it is further my opinion a POSITA would not have been motivated to combine Kuwata with Ohga either.

IX. ANALYSIS OF THE COMBINATION OF OHGA AND KUWATA AS APPLIED TO CLAIM 8 (GROUND 4)

A. The teachings of Ohga in combination with Kuwata do not satisfy all limitations of claim 8.

1. Claim element [8a]

103. With regard to claim 8, I disagree with Dr. Stevenson that Ohga discloses or suggests claim element [8a], “an update data storage module for storing in advance update data for image processing control data to control image processing of image data, the update data being associated with at least one of the image processing control data and identification data to identify the image processing control data.” In my opinion, Ohga fails to disclose both the alleged “update data” and “identification data,” and I disagree with Dr. Stevenson’s opinions to the contrary.

104. First, Dr. Stevenson identifies “profiles P1 and P2 associated with input and output devices, respectively” as “update data for image processing control data.” Ex. 1003, ¶ 215. As I described at § VIII of my declaration, however, Ohga’s input and output profiles are not “update data for image processing control data.” The profiles are not “image processing control data” because they do not control image processing. Image processing in Ohga is controlled by the CMM program, and the input and output profiles are simply

parameters passed into that program. Because Ohga's input and output profiles are not "image processing control data," they cannot be the claimed "update data" of "image processing control data" either, as the "update data" is updated image processing control data.

105. Dr. Stevenson then states these profiles "are associated with the names of the devices," and points to those names as "identification data." I disagree with Dr. Stevenson's mapping, because, while those names may identify the input and output devices, they are not "identification data" as recited in the patent claim. As recited in the claim, "identification data" must "identify the image processing control data," which Dr. Stevenson's "names of the devices" fail to do. To the extent the names identify anything, it is the device profiles, which are passed as parameters into the CMM program. The device profiles are not "image processing control data," at least because they do not control any image processing—they are simply inputs to a program (the CMM) that performs color matching. According to Ohga, the CMM program is manually downloaded by the user, who accesses it via a link in the HTML document on the server. Ex. 1007, Fig 5, 3:22-28. The CMM program is obtained independently of the names of the input and output devices.

106. The "names of the devices" therefore cannot be "identification data" as claimed because they do not identify "image processing control data," as

required by the claim. Ohga therefore fails to teach this claim element.

2. Claim element [8b]

107. I further disagree with Dr. Stevenson that Ohga discloses or suggests claim element 8[b], “an input module configured to input predetermined data from the peripheral device, the predetermined data including the image processing control data to be updated or the identification data.” I note first that Dr. Stevenson does not point to any disclosure in Ohga of the claim limitation “the predetermined data including the image processing control data to be updated.” Dr. Stevenson focuses instead on the alternative “or the identification data” limitation, pointing to the output profile name as the “identification data.” Ex. 1003, ¶ 218.

108. Dr. Stevenson’s mapping is incorrect. As recited in claim element [8a], the “identification data” must “identify the image processing control data.” Dr. Stevenson’s output profile name does not identify “image processing control data” because the output profile does not control image processing. Rather, it is passed as an input into the CMM program that performs color matching, as I have previously explained. Because Ohga does not disclose “identification data” as claimed, it fails to teach this claim element.

3. Claim element [8c]

109. I also disagree with Dr. Stevenson that Ohga discloses or suggests

claim element 8[c], “an update data transmission module configured to transmit the update data corresponding to the predetermined data to the peripheral device.” In particular, Dr. Stevenson points to “profiles” of the input and output devices as “update data.” Ex. 1003, ¶ 220. As I explained above for claim element [8a], as well as at § VIII of my declaration, Ohga’s input and output profiles are not “update data” because they are not “update data *for image processing control data*,” as claimed. The profiles do not control image processing, and therefore cannot be the claimed “update data.” Because Ohga does not disclose the claimed “update data,” it fails to teach this claim element.

4. Claim element [8d]

110. Finally, I disagree with Dr. Stevenson that Ohga discloses or suggests claim element 8[d], “wherein the image processing control data is to be used in processing of the image data by an image processing device that receives the image data and the image processing control data that are transferred from the peripheral device.” Here, Dr. Stevenson identifies “the input and output profiles” as “image processing control data.” Ex. 1003, ¶ 223. As I have already explained, however, those profiles are not “image processing control data” as claimed. Image processing in Ohga is controlled by the CMM program. The input and output profiles are simply parameters passed into that program; they are not themselves

“image processing control data” because they do not control image processing.

111. It is therefore my opinion that Ohga in view of Kuwata fails to disclose these limitations of claim 8. Further, for the reasons I discussed at § VII.B.1 above, it is further my opinion a POSITA would not have been motivated to combine those two references either, in view of their contradictory goals.

X. ANALYSIS OF OHGA AS APPLIED TO CLAIM 9 (GROUNDS 5 AND 6)

112. I disagree with Dr. Stevenson that Ohga anticipates or renders obvious claim 9, for reasons I describe below.

113. First, Dr. Stevenson opines that Ohga “discloses or suggests [9a] for the reasons explained for Ground 4, [8a].” I disagree with Dr. Stevenson for the same reasons I described for claim element [8a] above. In particular, Ohga does not teach the claimed “update data” or “identification data,” and therefore does not disclose or suggest this claim element.

114. Dr. Stevenson also opines that Ohga “discloses or suggests [9b] for the reasons explained for Ground 4, [8b].” I disagree with Dr. Stevenson for the same reasons I described for claim element [8b] above. In particular, Ohga does not teach the claimed “identification data,” and therefore does not disclose or suggest this claim element.

115. Dr. Stevenson also opines that Ohga “discloses or suggests [9c] for the reasons explained for Ground 4, [8c].” I disagree with Dr. Stevenson for the same reasons I described for claim element [8c] above. In particular, Ohga does not teach the claimed “update data,” and therefore does not disclose or suggest this claim element.

116. It is therefore my opinion that Ohga fails to teach or suggest these limitations of claim 9.

XI. ADDITIONAL REMARKS

117. I reserve any right that I may have to supplement this declaration if further information becomes available or if I am asked to consider additional information or to submit an additional declaration if *inter partes* review is instituted. Furthermore, I reserve any right that I may have to consider and comment on any additional expert statements and testimony of Petitioner’s expert in this matter.

118. I hereby declare 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 further declare 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 and that such

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willful false statements may jeopardize the validity of the application or any patents issued thereon.

A handwritten signature in black ink, appearing to be 'N/P', with a long horizontal stroke extending to the right.

Dated: April 29, 2025

Nikolaos Papanikolopoulos, Ph.D.