

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE PATENT TRIAL AND APPEAL BOARD

In the *Inter Partes* Review of:

U.S. Patent No. 7,365,871 B2

Control Number: unassigned

Filing Date: January 3, 2003

For: Apparatus for Capturing, Converting and Transmitting a Visual Image
Signal via a Digital Transmission System

Mail Stop Patent Board
Patent Trial and Appeal Board
P.O. Box 1450
Alexandria, VA 22313-1450

DECLARATION OF TIM A. WILLIAMS, PH.D. IN SUPPORT OF
PETITION FOR *INTER PARTES* REVIEW OF
U.S. PATENT NO. 7,365,871 B2

Attorney Docket No. 022807-0000054

Table of Contents

	<u>Page</u>
I. INTRODUCTION	2
A. Background and Qualifications	2
B. List of Cases Serving as Testifying Expert in Last Four Years	4
C. Compensation	4
D. Documents and Other Materials Relied Upon	4
II. LEGAL PRINCIPLES.....	5
A. Claim Interpretation	5
B. Prior Art.....	6
C. Anticipation	7
D. Obviousness.....	8
E. Date of Invention.....	13
III. THE '871 PATENT	14
A. The '871 Patent Technology Background and Disclosure.....	14
B. Challenged Claims of the '871 Patent.....	18
C. Person of Ordinary Skill in the Art for the '871 Patent	18
D. Claim Construction	19
IV. PRIOR ART.....	21
A. U.S. Patent No. 5,550,754 (“McNelley”) (Ex. 1003)	21
B. U.S. Patent No. 5,491,507 (“Umezawa”) (Ex. 1004)	23
C. Motivation to Combine the Prior Art.....	26
V. INVALIDITY OF CLAIMS 1-8 AND 12-14 OF THE '871 PATENT IN LIGHT OF THE PRIOR ART.....	28
A. Ground 1: Claims 1-8 and 12-14 are Obvious in view of McNelley and Umezawa	28
VI. REVISION OR SUPPLEMENTATION.....	116

I. INTRODUCTION

1. My name is Tim A. Williams, Ph.D. I have been asked by ZTE Corporation and ZTE (USA) Inc. to provide my expert opinions in support of their petition for *inter partes* review of Patent No. 7,365,871 B2 (“the ’871 Patent”), challenging the validity of claims 1-8 and 12-14 of the ’871 Patent.

2. I currently hold the opinions set forth in this declaration.

3. In summary, it is my opinion that the references cited below render obvious the claims of the ’871 patent. My detailed opinions on the claims are set forth below.

A. Background and Qualifications

4. I earned a Bachelor's Degree in Electrical Engineering from Michigan Technological University in 1976. I obtained my Master's Degree and Ph.D. in Electrical Engineering from the University of Texas at Austin in 1982 and 1985, respectively. I obtained a Masters of Business Administration from the University of Texas at Austin in 1991.

5. My professional industry experience includes approximately 15 years at Motorola Inc., where I was a Senior Engineer and Senior Member of the Technical Staff working on the development of communications systems technologies including the cellular architectures that included Global Systems

Mobile (GSM) voice codecs and channel modem, as well as Code Division Multiplexing (CDMA) voice codecs and channel modems to name a few.

6. I was the co-founder, CTO, Vice President of Engineering and Business Strategy CEO of Wireless Access, which developed PCS equipment for 2-way paging services. Wireless Access was sold to Glenarye Electronics. I served as the CTO and Advisory Board Member of Picazo Communications. I was also an Interim CEO and Advisory Board Member of Atheros Communications which was acquired by Qualcomm Inc., in 2011. I was the founder and CEO of JetQue Inc., which developed messaging solutions for mobile environments. I was the founder and CEO of SiBEAM Inc., which developed high speed networking ICs. SiBEAM was sold to Silicon Image in 2011. I have held numerous other technical and leadership positions in industry that are detailed in my CV that is attached hereto.

7. I am a registered Patent Agent (USPTO Reg. No. 50,790). I am an inventor and co-inventor on 26 issued patents which are listed in my CV.

8. I have served as an expert witness in over 75 patent litigation cases including cases in the Federal District Courts and the International Trade Commission.

9. A copy of my complete CV is attached hereto as Exhibit A.

B. List of Cases Serving as Testifying Expert in Last Four Years

10. In the past four years, I have provided technical consulting and expert testimony on behalf of clients as shown in my attached CV and list of cases in Exhibit A.

C. Compensation

11. I am being compensated for my time at the rate of \$675 per hour. This compensation is not contingent upon my performance, the outcome of this matter, or any issues involved in or related to this matter.

D. Documents and Other Materials Relied Upon

12. In forming the opinions set forth in this declaration, I have reviewed the '871 patent, its prosecution history, and the prior art references described below. Additionally, I have considered my own experience and expertise of the knowledge of the person of ordinary skill in the relevant art in the timeframe of the claimed priority date of the '871 patent. In doing so, I have reviewed information generally available to, and relied upon, by a person of ordinary skill at the time of the invention. I also considered certain documents and filings in IPR2015-00412, instituted by the Patent Trial and Appeal Board on May 11, 2015, including the petition (Paper No. 2) filed by Petitioner Apple Inc., the Patent Owner's Preliminary Response (Paper No. 11), the expert declaration of Steven J. Sasson (Exhibit 1008), and the Decision on Institution of *Inter Partes* Review (Paper No. 12).

13. I anticipate using some of the above referenced documents and information, or other information and material that may be made available during the course of this proceeding (such as by deposition testimony), as well as representative charts, graphs, schematics, and diagrams, animations, and models that will be based on those documents, information, and material, to support and to explain my testimony before the PTAB regarding the invalidity of the '871 Patent.

II. LEGAL PRINCIPLES

A. Claim Interpretation

14. While I am a registered Patent Agent, I am not a Patent Attorney and I do not opine in this paper on any particular methodology for interpreting patent claims. My opinions are limited to what I believe a person of ordinary skill in the art would have understood the meaning of certain claim terms to be based on the intrinsic evidence of the '871 patent. I use the principles below, however, as a guide in formulating my opinions.

15. I am informed and understand that it is a basic principle of patent law that assessing the validity of a patent claim involves a two-step analysis. In the first step, the claim language must be properly construed to determine its scope and meaning. In the second step, the claim as properly construed must be compared to the alleged prior art to determine whether the claim is valid.

16. I am informed and understand that the words of a patent claim have their plain and ordinary meaning for a person skilled in the art at the time of the invention. This meaning must be ascertained from a reading of the patent documents, paying special attention to the language of the claims, the written specifications, and the prosecution history. I understand that an inventor may attribute special meanings to some terms by defining those terms or by otherwise incorporating such meanings in these documents.

17. My methodology for determining the meaning of claim phrases was first to carefully study the '871 patent. In particular, I studied the claims themselves, followed by a study of the background, detailed specification, figures, and other patent content. Next, I reviewed the file history looking for any clarifications or limitations that might be attached to claim terms. In some circumstances, I looked at other documents, such as references applied by the Patent Office.

B. Prior Art

18. It is my understanding that only information which satisfies one of the categories of prior art set forth in 35 U.S.C. § 102 may be used in any invalidity analysis under §§ 102 or 103. Therefore, if information is not properly classified as prior art under one of the subsections of § 102, then it may not be considered in an anticipation or obviousness determination. It is also my understanding that, for

inter partes review, applicable prior art is limited to patents and printed publications.

19. I am informed and understand that the earliest claimed priority date for the '871 patent is January 12, 1998. I also understand that prior art references published on or before January 12, 1997 are always considered prior art to the '871 patent, and that prior art references published after January 12, 1997 but before January 12, 1998 are considered prior art to the '871 patent unless the patent owner can prove that the purported invention was conceived before the publication of the reference. I understand that a patent granted on an application for patent, filed in the United States before January 12, 1998, is considered prior art to the '871 patent unless the patent owner can prove that the purported invention was conceived before the filing date of the prior art reference or that the prior art reference and the '871 patent shared common inventors, were co-owned, or under an obligation of assignment to a common owner at the time the application was filed.

C. Anticipation

20. I am informed and understand that to anticipate a patent claim under 35 U.S.C. § 102, a single asserted prior art reference must disclose each and every element of the claimed invention, either explicitly or inherently, to a person of ordinary skill in the art. I understand that a disclosure of an asserted prior art reference can be “inherent” if the missing element must necessarily be present in

what is explicitly described in the asserted prior art reference and such would be recognized by a person of ordinary skill in the art. However, I understand that inherency cannot be established by a mere probabilities or possibilities.

D. Obviousness

21. I am also informed and understand that a patent claim is invalid under 35 U.S.C. § 103 if the differences between the invention and the prior art are such that the subject matter as a whole would have been obvious at the time of the invention to a person having ordinary skill in the art to which the subject matter pertains. Obviousness, as I understand, is based on the scope and content of the prior art, the differences between the prior art and the claim, the level of ordinary skill in the art, and secondary indications of non-obviousness to the extent they exist.

22. I understand that whether there are any relevant differences between the prior art and the claimed invention is to be analyzed from the view of a person of ordinary skill in the art at the time of the invention. A person of ordinary skill in the art is a hypothetical person who is presumed to be aware of all of the relevant art at the time of the invention. The person of ordinary skill is not an automaton, and may be able to fit together the teachings of multiple patents employing ordinary creativity and the common sense that familiar items may have obvious uses in another context or beyond their primary purposes.

23. In analyzing the relevance of the differences between the claimed invention and the prior art, I understand that I must consider the impact, if any, of such differences on the obviousness or non-obviousness of the invention as a whole, not merely some portion of it. The person of ordinary skill faced with a problem is able to apply his or her experience and ability to solve the problem and also look to any available prior art to help solve the problem.

24. An invention is obvious if a designer of ordinary skill in the art, facing the wide range of needs created by developments in the field, would have seen an obvious benefit to the solutions tried by the applicant. When there is a design need or market pressure to solve a problem and there are a finite number of identified, predictable solutions, it would be obvious to a person of ordinary skill to try the known options. If a technique has been used to improve one device, and a person of ordinary skill in the art would recognize that it would improve similar devices in the same way, using the technique would have been obvious.

25. I understand that I do not need to look for precise teaching in the prior art directed to the subject matter of the claimed invention. I understand that I may take into account the inferences and creative steps that a person of ordinary skill in the art would have employed in reviewing the prior art at the time of the invention. For example, if the claimed invention combined elements known in the prior art and the combination yielded results that were predictable to a person of ordinary

skill in the art at the time of the invention, then this evidence would make it more likely that the claim was obvious. On the other hand, if the combination of known elements yielded unexpected or unpredictable results, or if the prior art teaches away from combining the known elements, then this evidence would make it more likely that the claim that successfully combined those elements was not obvious.

26. In determining whether a claimed invention is invalid for obviousness, one should consider the scope and content of the prior art, the level of ordinary skill in the relevant art, the differences between the claimed invention and the prior art, and whether the claimed invention would have been obvious to a person having ordinary skill in the art in light of those differences. I understand that hindsight must not be used when comparing the prior art to the invention for obviousness.

1. Motivation to Combine

27. I understand that a claimed invention may be obvious if some teaching, suggestion or motivation exists that would have led a person of ordinary skill in the art to combine the invalidating references. I also understand that this suggestion or motivation may come from sources such as explicit statements in the prior art, or from the knowledge of a person having ordinary skill in the art. Alternatively, any need or problem known in the field at the time and addressed by the patent may provide a reason for combining elements of the prior art. I also

understand that when there is a design need or market pressure, and there are a finite number of predictable solutions, a person of ordinary skill may be motivated to apply both his skill and common sense in trying to combine the known options in order to solve the problem.

28. Obviousness may also be shown by demonstrating that it would have been obvious to modify what is taught in a single piece of prior art to create the patented invention. Obviousness may be shown by showing that it would have been obvious to combine the teachings of more than one item of prior art. In determining whether a piece of prior art could have been combined with other prior art or with other information within the knowledge of a person having ordinary skill in the art, the following are examples of approaches and rationales that may be considered:

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

- Applying a technique or approach that would have been “obvious to try” (choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success);
- Known work in one field of endeavor may prompt variations of it for use in either the same field or a different one based on design incentives or other market forces if the variations would have been predictable to a person having ordinary skill in the art; or
- Some teaching, suggestion, or motivation in the prior art that would have led one of ordinary skill to modify the prior art reference or to combine prior art reference teachings to arrive at the claimed invention.

2. Secondary Considerations

29. I understand that certain objective factors, sometimes known as “secondary considerations,” may also be taken into account in determining whether a claimed invention would have been obvious. In most instances, these secondary considerations of non-obviousness are raised by the patentee. In that context, the patentee argues an invention would not have been obvious in view of these considerations, which include: (a) commercial success of a product due to the merits of the claimed invention; (b) a long-felt, but unsatisfied need for the invention; (c) failure of others to find the solution provided by the claimed invention; (d) deliberate copying of the invention by others; (e) unexpected results

achieved by the invention; (f) praise of the invention by others skilled in the art; (g) lack of independent simultaneous invention within a comparatively short space of time; (h) teaching away from the invention in the prior art. I also understand that these objective indications are only relevant to obviousness if there is a connection, or nexus, between them and the invention covered by the patent claims.

30. I also understand that secondary considerations of non-obviousness are inadequate to overcome a strong showing on the primary considerations of obviousness. For example, where the inventions represented no more than the predictable use of prior art elements according to their established functions, the secondary considerations are inadequate to establish non-obviousness.

31. The Patent Owner did not identify any alleged objective indicia of non-obviousness in its Preliminary Response (Paper No. 11) in Case IPR2015-00412. I am not aware of any objective indicia of non-obviousness for the '871 patent.

E. Date of Invention

32. I understand that absent clear and convincing evidence of invention date prior to the filing date of a patent, the invention date of the patent is presumed to be its effective filing date. A prior invention requires a complete conception of the invention and a reduction to practice of that invention. The patentee has the

burden of establishing by clear and convincing evidence a date of conception earlier than the effective filing date of the patent.

33. Conception is the formation in the mind of the inventor of a definite and permanent idea of the complete and operative invention. Conception must be proved by corroborating evidence which shows that the inventor disclosed to others his complete thought expressed in such clear terms as to enable those skilled in the art to make the claimed invention. The inventor must also show possession of every feature recited in the claims, and that every limitation was known to the inventor at the time of the alleged conception. Furthermore, the patentee must show that he or she has exercised reasonable diligence in later reducing the invention to practice, either actual or constructive. The filing of a patent application can serve as a constructive reduction to practice.

III. THE '871 PATENT

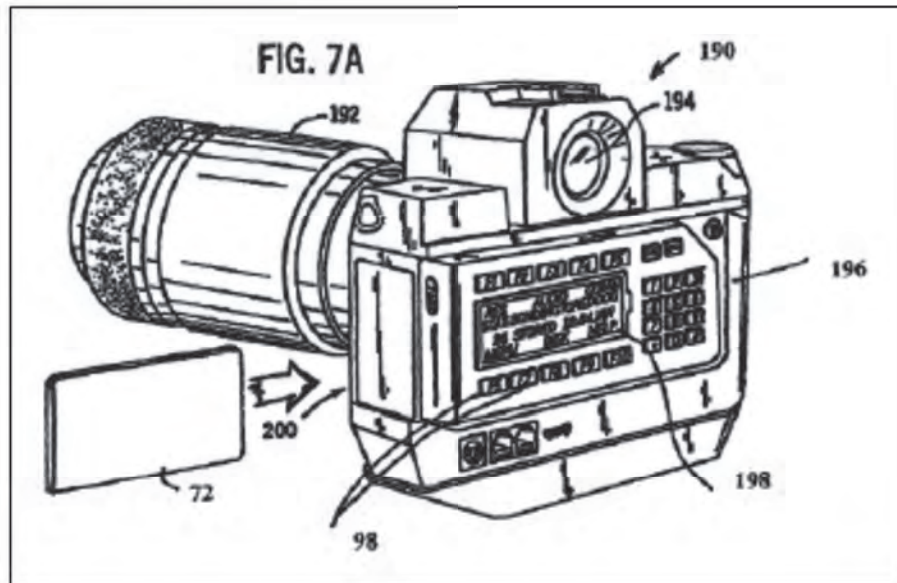
A. The '871 Patent Technology Background and Disclosure

34. The '871 patent relates generally to “image capture and transmission systems and is specifically directed to an image capture, compression, and transmission system for use in connection with land line and wireless telephone systems.” Ex. 1001, '871 patent at 1:17-20. According to the '871 patent, the system “is particularly well suited for sending and/or receiving images via a

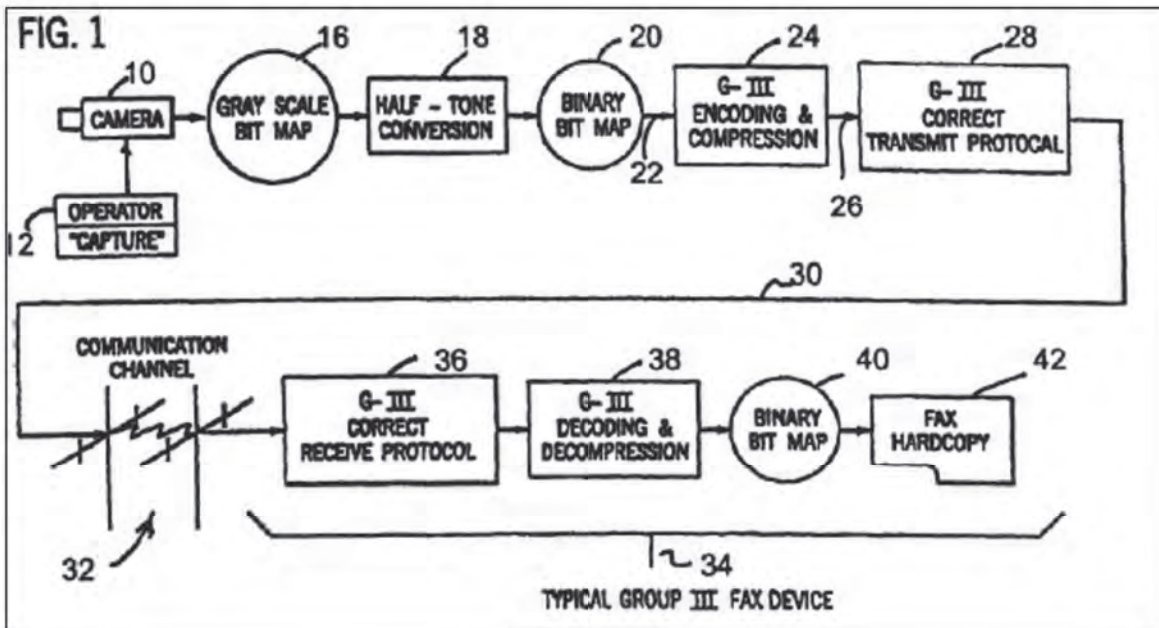
standard Group III facsimile transmission system and permits capture of the image at a remote location using an analog or digital camera.” *Id.* at 5:3-6.

35. Figure 7A depicts “a hand held device for capturing, storing and transmitting an image in accordance with the invention.” *Id.* at 4:46-48, 11:3-20.

Figure 7A is reproduced below:



36. Figure 1 of the '871 patent provides a block diagram of a basic facsimile camera configuration for capturing an image via a camera and transmitting it via Group III facsimile transmission to a standard hard copy medium. *Id.* at 4:27-30. Figure 1 is reproduced below:



37. Claim 1 of the '871 patent, reproduced below, is illustrative.

1. A handheld self-contained cellular telephone and integrated image processing system for both sending and receiving telephonic audio signals and for capturing a visual image and transmitting it to a compatible remote receiving station of a wireless telephone network, the system comprising:

a manually portable housing;

an integral image capture device comprising an electronic camera contained within the portable housing;

a display for displaying an image framed by the camera, the display being supported by the housing, the display and the electronic

camera being commonly movable in the housing when the housing is moved by hand;

a processor in the housing for generating an image data signal representing the image framed by the camera;

a memory associated with the processor for receiving and storing the digitized framed image, accessible for selectively displaying in the display window and accessible for selectively transmitting over the wireless telephone network the digitized framed image;

a user interface for enabling a user to select the image data signal for viewing and transmission;

a telephonic system in the housing for sending and receiving digitized audio signals and for sending the image data signal;

alphanumeric input keys in the housing for permitting manually input digitized alphanumeric signals to be input to the processor, the telephonic system further used for sending the digitized alphanumeric signals;

a wireless communications device adapted for transmitting any of the digitized signals to the compatible remote receiving station;
and

a power supply for powering the system.

B. Challenged Claims of the '871 Patent

38. I understand that the challenged claims of the '871 patent are claims 1-8 and 12-14. Claims 1, 6 and 12 are independent claims, while claims 2-5, 7, 8, 13 and 14 are dependent claims.

C. Person of Ordinary Skill in the Art for the '871 Patent

39. I expect to offer testimony regarding the level of ordinary skill in the art relevant to the '871 patent. I understand that factors such as the education level of those working in the field, the sophistication of the technology, the types of problems encountered in the art, the prior art solutions to those problems, and the speed at which innovations are made may help establish the level of skill in the art.

40. The '871 patent relates to methods and apparatus for wireless communications. The claimed priority date for the '871 patent is January 12, 1998.

41. In the 1998 time frame, I believe a person of ordinary skill in the art of the subject matter of the '871 Patent would have had a Bachelor's degree in electrical engineering or a similar degree, with 3-5 years of experience in the design and implementation of such wireless communications systems, or the equivalent.

42. Based on my education and experience in the field of wireless communications relevant to the '871 patent, I would have been at least a person of ordinary skill in the art at the earliest priority date of the '871 patent. Unless otherwise stated below, when I provide my understanding and analysis below, it is consistent with the level of ordinary skill in the technologies at or around the priority date of the '871 patent.

D. Claim Construction

43. I understand that for the purpose of *inter partes* review, claim terms are presumed to take on their broadest reasonable interpretation (BRI), to a person of ordinary skill in the art, which is consistent with the specification. It is my opinion that this presumption is appropriate for the interpretation of the challenged claims of the '871 Patent.

44. My opinions regarding the construction of certain claim terms are limited only to this *inter partes* review, under the standard articulated above, and should not be interpreted as my opinion regarding the construction of those certain claim terms under the standard of claim construction used in a district court (or any other) proceeding.

1. **“an image framed by the camera” (claim 1) / “framing the image to be captured” (claims 2, 9, 12) / “visually framing a visual image to be captured” (claim 6) / “framing the visual image (claim 7)”**

45. The '871 patent's claims include various limitations related to “framing an image.” The phrase “an image framed by the camera” appears in claim 1, the phrase “framing the image to be captured,” appears in claims 2, 9, 12, the phrase “visually framing a visual image to be captured,” appears in claim 6, and the phrase “framing the visual image framing and image” appears in claim 7. The broadest reasonable interpretation for these terms is similar, and refers to using the camera to establish boundaries of an image. As the claim language itself demonstrates, “frame” in the context of the claims refers to composing an image by positioning the subject of the image within the boundaries of the camera's field of view. The specification does not provide any further guidance as it fails to use the terms “framed” or “framing,” and only uses the term “frame” as a noun in an image processing context. *See* Ex. 1001 at 8:21-23. The prosecution history does not appear to provide any meaningful guidance on the term. As a result, the broadest reasonable interpretation of “an image framed by the camera” as used in claim 1 means “an image having boundaries established by the camera”; “framing [a visual/the] image to be captured” as used in claims 2, 6, 9, and 12 means “visually establishing the boundaries of an image to be captured”; and “framing the visual image” as used in claim 7 means “establishing the boundaries of an image.”

Such a construction is consistent with the language of the challenged claims in the '871 patent and does not conflict with the intrinsic evidence.

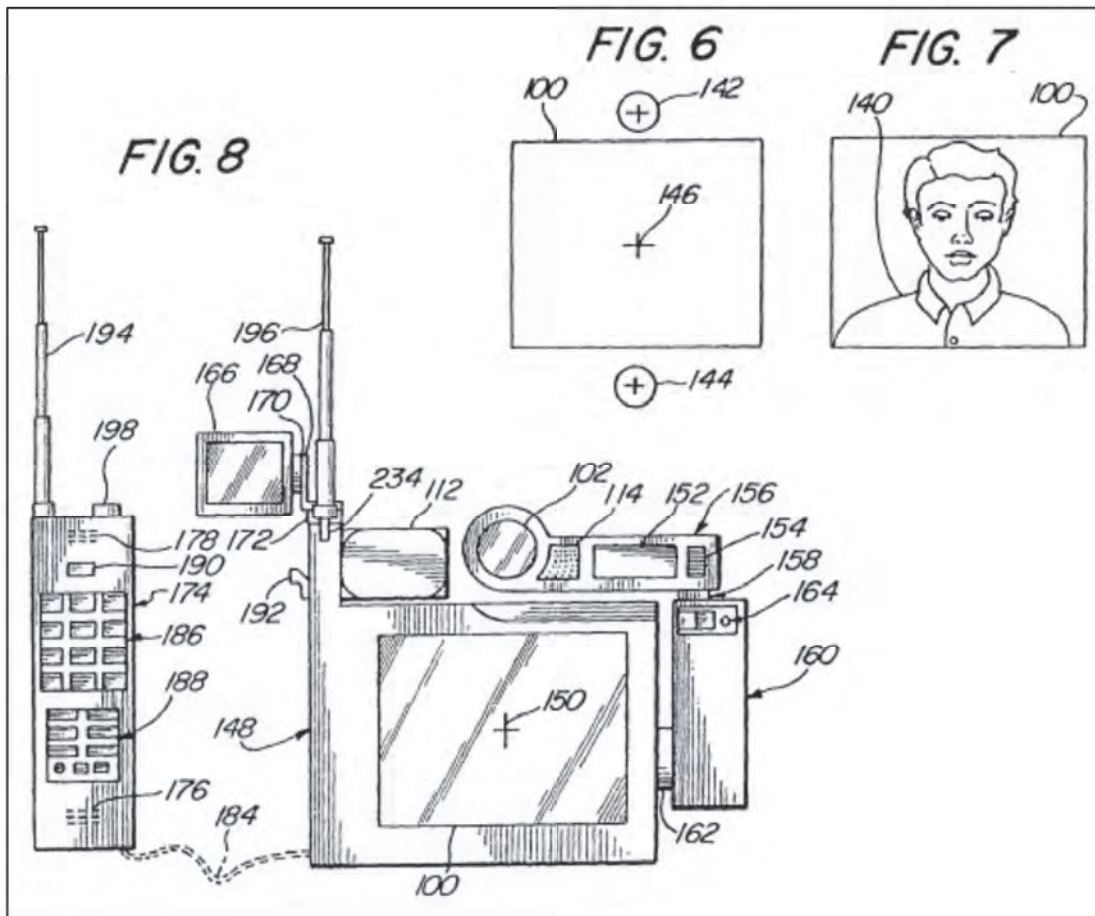
46. I reserve the right to amend my opinions stated herein should the Board order a construction of claim terms other than my opinion reflected herein regarding their broadest reasonable interpretation to a person of ordinary skill in the art at the time of the '871 patent application.

IV. PRIOR ART

A. U.S. Patent No. 5,550,754 (“McNelley”) (Ex. 1003)

47. The McNelley patent, titled “Teleconferencing Camcorder,” was filed on May 13, 1994 and issued on August 27, 1996. As such, it is my understanding that McNelley qualifies as prior art to the '871 Patent under 35 U.S.C. § 102(b). McNelley was not considered by the examiner during prosecution of the '871 patent.

48. The McNelley patent discloses a device that combines a portable recording video camera and video-conferencing terminal. Ex. 1003, McNelley at Abstract. The McNelley describes a “telecamcorder configured for use as a self-contained teleconferencing terminal as well as a camcorder” *Id.* at 6:35-37. The disclosed device integrates a phone, camera, microphone, speaker, and antenna for transmission and reception of images and sound. *Id.* at Fig. 8. Illustrative figures of the McNelley patent’s device are provided below:



Id. at Figs. 6-8.

49. Figure 6 illustrates the preferred placement of the camcorder's camera either above (142) or below (144) the display 100 on a perpendicular axis that passes through the center (146) of the display. *Id.* at 6:7-11. Figure 7 illustrates the appearance of a conferee whose image is captured by the camera in position 142 of Figure 6, which permits natural conversation in which people face each other while talking. *Id.* at 6:11-16. Figure 8 illustrates a configuration of a complete telecamcorder terminal disclosed by the McNelley patent. *Id.* at 3:18-19. Figure 8 shows the telecamcorder in teleconferencing mode where camera 102 is

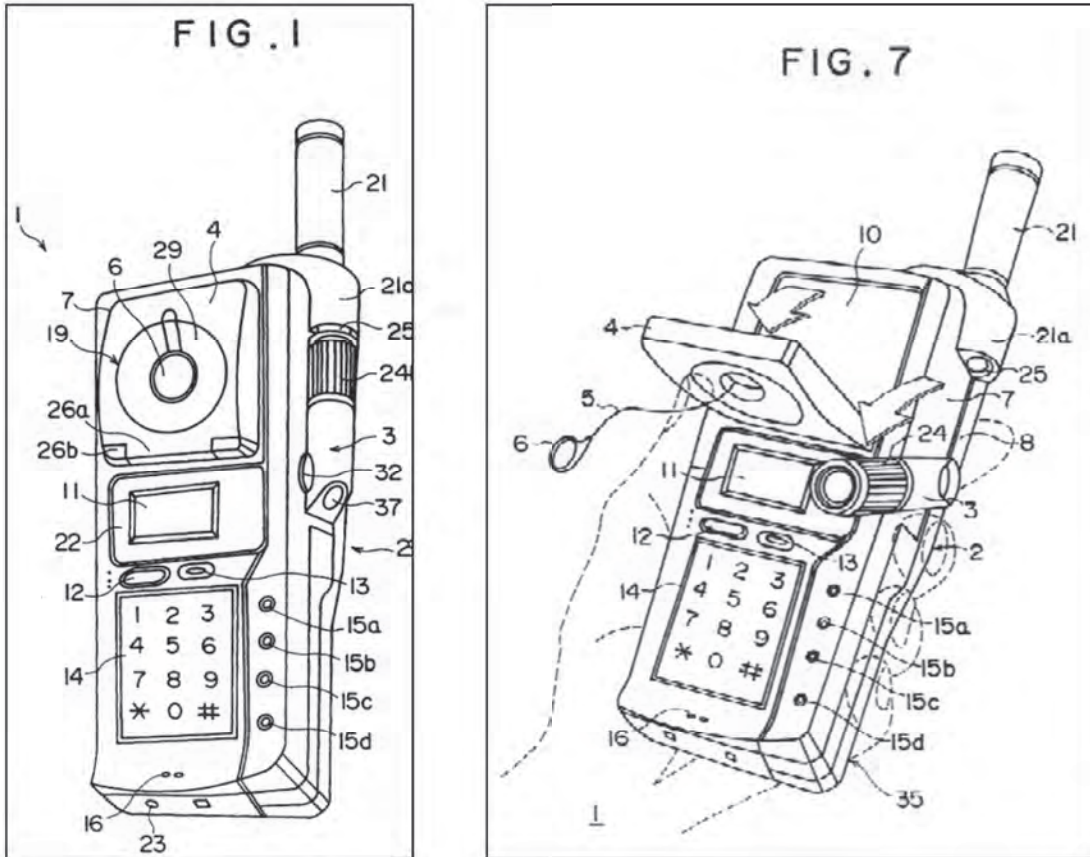
pointed in the same direction as the viewing side of the display 100. *Id.* at 6:37-39. Camera 102, which is located above display 100 along center axis 150, permits face-to-face conversation. *Id.* at 6:43-45. The rotatable camera boom 156 also contains microphone 114, light 152, and camera 102. *Id.* at 6:45-48. The device's handset 174, which includes microphone 176 and speaker 178, functions like a traditional phone and can be connected directly to the main housing 148 by line 184 through common phone jacks. *Id.* at 7:41-44. Included on handset 174 are network access controls 186, telecamcorder controls 188, and latch 190 that mates with latch 92 on the main housing 148. *Id.* at 7:58-61.

B. U.S. Patent No. 5,491,507 (“Umezawa”) (Ex. 1004)

50. The Umezawa patent, titled “Video Telephone Equipment,” was filed on October 22, 1993 and issued on February 13, 1996. As such, it is my understanding that Umezawa qualifies as prior art to the '871 Patent under 35 U.S.C. § 102(b). Umezawa was not considered by the examiner during prosecution of the '871 patent.

51. Umezawa discloses a video telephone device that permits a user to send and receive pictures and speech while holding the device in one hand. Ex. 1004, Umezawa at Abstract. Umezawa's disclosed device includes a microphone, a speaker, a display panel, a control panel, and a camera. *Id.* Umezawa's Figs. 1 and 7 illustrate a preferred embodiment of the disclosed device in vocal

communication and visual communication attitudes, respectively. Figures 1 and 7 are reproduced below:



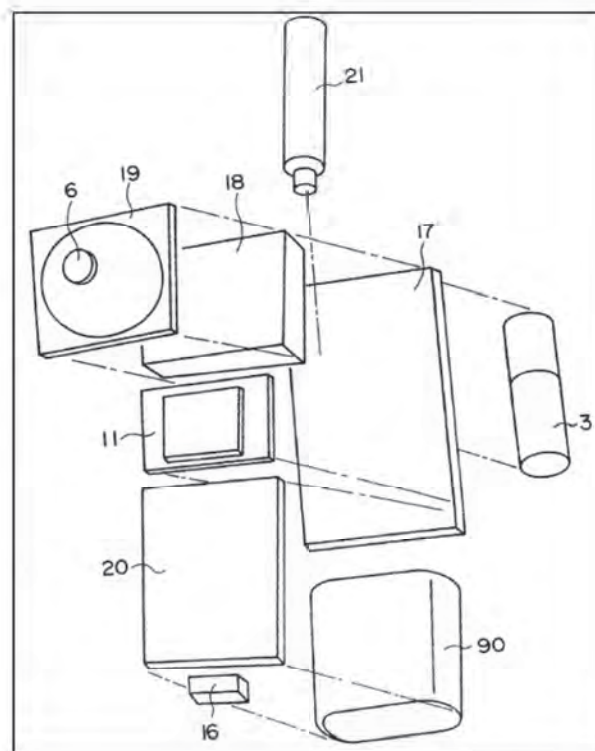
Id. at Figs. 1, 7.

52. As shown in these figures, Umezawa's device has a body 2. *Id.* at 5:31-34. Camera 3, speaker 6 (located within ear pad 4), display panel 11, transmission/reception key 12, termination key 13, control panel 14, functional keys 15, and microphone 16 are all located on body 2. *Id.* at 5:35-49. Control panel 14 is a liquid crystal display (LCD) with a touch panel. *Id.* at 8:23-29.

Umezawa describes using control panel 14 and function keys 15 can be used as a user interface for changing-over picture frames, scrolling the picture frame,

inputting telephone numbers, and other functions for video phone transmission. *Id.* 8:30-35, 10:16-31, 10:62-11:8.

53. Umezawa further discloses that its device includes a circuit board 17, which contains a processor and a memory, a communication device 18, speaker 6, LCD 11, control circuit board 20, microphone 16, battery 90, antenna 21, and camera 3. *Id.* at 5:53-62. These internal components are illustrated in an exploded view of Umezawa video telephone, which is illustrated in Figure 3, reproduced below:



Id. at Fig. 3.

C. Motivation to Combine the Prior Art

54. It is my opinion that each of the challenged claims of the '871 Patent would have been obvious to a person of ordinary skill in the art based on combinations of (a) the teachings of McNelley, (b) the teachings of Umezawa, and (3) the knowledge of a person of ordinary skill in the art at the time of the alleged invention of the '871 patent. A person skilled in the art would combine these teachings because these references both relate to hand-held devices that combine a camera and a wireless telephone for recording, sending, and receiving audio and video, and both references address similar problems. That is, a person of ordinary skill in the art seeking to solve the problems identified in the '871 patent would, in my opinion, look to these prior art references for teaching. The combination of these prior art elements, or substitution of one element for another, would require nothing more than the knowledge or common sense of a skilled artisan using known methods to yield predictable results in this field of technology.

55. More specifically, a person of ordinary skill in the art would actually be encouraged to combine these particular references because each reference (McNelley and Umezawa) provides solutions to challenges faced by the system disclosed in each reference. Because each of the references attempt to address the same technical issues of creating a hand-held video conferencing device that allows for integrated telephone and image processing, the solution proposed in

each reference is applicable to the other reference and interchangeable with other ways to address challenges each has in common, such as the need to transmit and receive audio and video signals, the need for a small device capable of easy and convenient operation (such as with one hand), and the need for the device to be mobile and self-powered. These are routine technical problems at the time the '871 patent was filed, and one of ordinary skill in the art would have been familiar with such problems and motivated to look to references such as McNelley and Umezawa for suggested solutions.

56. A person of ordinary skill in the art, for example, would have been motivated to reduce the size and increase the convenience of the McNelley telecamcorder device. Indeed, McNelley itself teaches that size and weight are known problems for telecamcorder devices and that size reduction solutions should be explored. *See, e.g.*, Exhibit 1003, McNelley at 12:24-35 (noting the need for size and weight reductions and suggesting solid state storage as an option). Thus, a person of ordinary skill in the art would have been motivated to look to other solutions for further size reduction and convenient hand held operation of the McNelley device. The Umezawa hand-held video conferencing device is likewise directed at improving one-handed user operation and size reduction. *See e.g.*, Exhibit 1004, Umezawa, 1:35-40. The Umezawa user interface enables user selection of images for display and transmission, as well as the confirmation of

entered numbers through its display, in a one-handed implementation. *See, e.g., id.* at Fig. 7, 8:23-29, 10:3-22. One of ordinary skill in the art would have therefore been motivated to combine the device in McNelley with features from Umezawa—such as its processor and processing functionality, its LCD touch control panel and user interface—at least for the purpose of providing a more convenient and smaller device that can be held in one hand, easily operated, and allows for confirming the accuracy data entry (such as telephone numbers) using its display. Accordingly, a person of ordinary skill would have found it obvious to combine the McNelley and Umezawa devices and disclosures.

57. The combination of McNelley and Umezawa discloses and renders obvious each of the limitations of the Asserted Claims because each of the claimed features is disclosed in these references, either expressly or inherently, as explained in detail below.

V. INVALIDITY OF CLAIMS 1-8 AND 12-14 OF THE '871 PATENT IN LIGHT OF THE PRIOR ART

A. Ground 1: Claims 1-8 and 12-14 are Obvious in view of McNelley and Umezawa

58. It is my opinion that claims 1-8 and 12-14 of the '871 patent are obvious over the combination of McNelley (Ex. 1003) in view of Umezawa (Ex. 1004) for at least the reasons given below, including the claim charts.

1. Independent Claim 1

- a. Claim 1 preamble: “A handheld self-contained cellular telephone and integrated image processing system”

59. McNelley discloses a handheld device: “In one mode, the operator holds the entire unit in front of him/her with the display 100, serving as the viewfinder.” Ex. 1003, McNelley at 10:16-18. Further, McNelley discloses a self-contained device, “Fig. 8 shows a telecamcorder configured for use as a self-contained teleconferencing terminal as well as a camcorder.” *Id.* at 6:35-37. McNelley discloses an integrated image processing system, the telecamcorder: “where the camera 102 is pointed in the same direction as the viewing side of the display...,” *id.* at 6:38-39, and “FIG. 9 shows a left side view of the telecamcorder illustrated in FIG. 8. This figure shows the dialing controls 186 and the telecamcorder controls 188 built into the main housing 148. Built-in controls may serve in lieu of controls on the handset 174, or both sets of controls may be employed on a single telecamcorder.” *Id.* at 8:10-15. McNelley also discloses a wireless/cellular telephone system: “In the near future, video-phone networks will use one or a combination of phone lines, television cables and wireless networks (i.e., cellular phone systems). The telecamcorder is applicable to any type of network.” *Id.* at 14:16-18. McNelley therefore discloses the claimed handheld self-contained cellular telephone and integrated image processing system to one of ordinary skill in the art.

- b. Claim 1 preamble: “for both sending and receiving telephonic audio signals”

60. McNelley discloses a “camcorder (telecamcorder) of the present invention contains an integral video-phone capable of receiving and sending teleconferencing signals.” *Id.* at 5:1-3. It would be understood by a person of ordinary skill in the art that the disclosed camcorder would also be capable of sending and receiving audio, especially because this capability was disclosed in McNelley: “With a wireless network the telecamcorder can serve as a portable wireless teleconferencing terminal much like a portable cellular phone.” *Id.* at 14:28-31. A person of ordinary skill in the art would also understand that the device disclosed in McNelley operates as a portable cell phone, which requires the sending and receiving of telephonic audio signals. Therefore, person of ordinary skill in the art would understand that McNelley discloses the both sending and receiving telephonic audio claim limitation.

- c. Claim 1 preamble: “for capturing a visual image and transmitting it to a compatible remote receiving station of a wireless telephone network”

61. McNelley discloses the ability to capture and transmit (receiving and sending) a visual image: “camcorder (telecamcorder) of the present invention contains an integral video-phone capable of receiving and sending teleconferencing signals and includes a built in display to view an incoming teleconferencing signal and a video pickup device that can produce an image of the operator for

transmissions during teleconferencing.” Ex. 1003, McNelley at 5:1-7. McNelley further discloses a teleconference mode that would have captured and transmitted images: “if the unit is used in the teleconferencing mode, the controller 400 routes the signal to a network access or communication electronics package 402. This electronics package establishes contact with a network and sends properly processed audio and video signals to the network through a connection 104 and received audio and video through the same connection 104.” *Id.* at 21:30-36 (referring to Fig. 30). McNelley also discloses a wireless/cellular phone network: “In the near future, video-phone networks will use one or a combination of phone lines, television cables and wireless networks (i.e., cellular phone systems). The telecamcorder is applicable to any type of network.” *Id.* at 14:16-18. And person of ordinary skill in the art would understand that teleconferencing refers to both transmission and receipt of visual signals, that the visual images are captured and transmitted through the wireless telephone/cellular phone network described. McNelley therefore discloses the subject matter in the limitations of the claim preamble to a person of ordinary skill in the art.

d. Claim 1 preamble: “the system comprising: a manually portable housing”

62. The disclosed “telecamcorder” structure in McNelley shown in Fig. 8 is portable because it is handheld: “Fig. 8 shows a telecamcorder configured for use as a self-contained teleconferencing terminal as well as a camcorder,” *id.* at

6:35-37, and “[i]n one mode, the operator holds the entire unit in front of him/her with the display 100, serving as the viewfinder,” *id.* at 10:16-18. McNelley discloses the manually portable housing of the claim limitation to a person of ordinary skill in the art.

- e. Claim 1 preamble: “an integral image capture device comprising an electronic camera contained within the portable housing”

63. McNelley discloses a telecamcorder “where the camera 102 is pointed in the same direction as the viewing side of the display...,” *id.* at 6:37-39, that includes “a charge coupled device (CCD) optical pickup. As electrical values are read from the CCD, the values are immediately converted into digital values and remain digital through all subsequent processing,” *id.* at 13:5-8. The electronic camera with the charge coupled device (CCD) optical pickup disclosed in McNelley is an integral image capture device. Therefore McNelley discloses this claim limitation to a person of ordinary skill in the art.

- f. Claim 1: “a display for displaying an image framed by the camera, the display being supported by the housing, the display and the electronic camera being commonly movable in the housing when the housing is moved by hand”

64. McNelley discloses a camera display: “display may be of any type, but thin lightweight displays, such as an active matrix LCD, are preferred,” *id.* at 6:41-43, and that the display can be used as a “viewfinder,” *id.* at 7:14-16. A person of ordinary skill in the art would understand that a viewfinder displays an

image framed by the camera. McNelley also discloses that the display is supported by and contained by the housing, and is movable by “a rotating hand grip 160” and “pivot 158 and 160” that can be “adjusted vertically by the pivot 162 and horizontally by the pivot.” *Id.* at 6:59-7:3. To a person of ordinary skill in the art, McNelley discloses the claim limitation subject matter.

g. Claim 1: “a processor in the housing for generating an image data signal representing the image framed by the camera”

65. Figure 30 of the McNelley reference, a block diagram of a telecamcorder, would include a processor in the shown video camera electronics 404 which “processes the output of the camera 406 into a final video signal to be fed to the controller 400.” Ex. 1003, McNelley at 21:13-16.

66. The McNelley reference also notes that “An enhanced digitally-based telecamcorder may include microprocessors for operational functions.” *Id.* at 20:54-55. Furthermore, a person of ordinary skill in the art would understand that the video camera electronics shown in Fig. 30 would be contained within the telecamcorder’s housing. *See, e.g., id.* at 4: 3-4 regarding description of Fig 30. A person of ordinary skill in the art would have also understood at the time the McNelley patent was filed that digital electronics would process the digital image data. Furthermore, the McNelley reference describes image compression being performed by digital electronics, that:

Recent advances in compression technology promise full motion, real-time teleconferencing using a single phone line, cable or wireless broadcast. Such advanced digital compression formats use small ASIC chips for compression and decompression. These chips can readily be built into the telecamcorder.

Id. at 18:43-48. The McNelley reference also discloses that “digital recording” can be used, *id.* at 12:36-39, that “digital storage may be used as a computer peripheral with modem data transmission and reception of data . . . ,” and that an “enhanced digitally-based telecamcorder may include microprocessors for operational functions,” *id.* at 20:54-58. As presented above, McNelley discloses the processor electronics for generating image data as understood by a person of ordinary skill in the art.

67. The claim feature of processor electronics for generating image data is also explicitly taught in Umezawa: it discloses (1) “In one aspect of performance of the present invention, there is provided a video telephone equipment, comprising signal processing means for permitting ... a visual communication; a display panel which displays a received picture for the visual communication; a camera which takes a picture to-be-transmitted for the visual communication...,” Ex. 1004, Umezawa at 1:61-2:8; and (2) “The handy type video telephone equipment 1 is furnished with a main circuit board 17 which includes a processor and a memory . . . ,” *id.* at 5:55-56. A person of ordinary skill in the art would have understood that the processor described in Umezawa operates as a signal

processing means to process digital image data and provide the disclosed visual communication. This would also have involved displaying digitized image frames on the display.

68. A person of ordinary skill in the art would understand that the processor generates data signals that represent the framed image. Umezawa discloses the claimed processor in the housing for visual communication. Adding Umezawa's processor functionality to McNelley would be akin to adding known elements in predictable ways, with predictable results, and would allow the combination to continue to operate according to the intended purposes described in those disclosures.

69. Also, as examined *supra*, including Umezawa's processor functionality and user interface (LCD touch control panel) in McNelley's described invention would have been desirable for (1) the purposes of providing a smaller and more convenient handheld videoconferencing device; and for (2) providing a more convenient user control/user interface via the LCD touch control panel. *See, e.g.*, Ex. 1003, McNelley at FIGS. 8, 10-12; Ex. 1004, Umezawa at 1:36-40, 8:23-29, 10:3-22, Fig. 7. Therefore, the combination of Umezawa and McNelley would have been obvious to a person of ordinary skill in the art at the time of the invention, and encompasses this claim limitation.

- h. Claim 1: "a memory associated with the processor for receiving and storing the digitized framed image"

70. McNelley also discloses that the “recording electronics processes the signals for storage in memory 422. The memory 422 actually comprises any type of data recording medium ranging from tape and disks to solid state microelectronic memory.” Ex. 1003, McNelley at 21:23-26.

71. McNelley also discloses “digital recording,” 12:36-39, an “enhanced digitally-based telecamcorder may include microprocessors for operational functions,” and “digital storage may be used as a computer peripheral with modem data transmission and reception of data,” *id.* at 20:54-66. Digital storage would have been understood by a person of ordinary skill in the art to be capable of storing digital image data. Memory is known to a person of ordinary skill in the art to receive and store the framed digital image when (digital) memory is used with a processor in the creation of digital image data. As detailed above, McNelley discloses the claim limitation: “a memory associated with the processor for receiving and storing the digitized framed image,” to a person of ordinary skill in the art.

- i. Claim 1: “accessible for selectively displaying in the display window and accessible for selectively transmitting over the wireless telephone network the digitized framed image”

72. McNelley discloses the telecamcorder can be used on different types on networks including a wireless network: “In the near future, video-phone networks will use one or a combination of phone lines, television cables and

wireless networks (i.e., cellular phone systems). The telecamcorder is applicable to any type of network,” *id.* at 14:16-18, and “with a wireless network the telecamcorder can serve as a portable wireless teleconferencing terminal much like a portable cellular phone,” *id.* at 14:28-31.

73. McNelley also discloses that when “the telecamcorder is being used to make a recording, the controller 400 conditions the audio and video signals, if necessary, and . . . the recording electronics 420 processes the signals for storage in memory 422,” *id.* at 21:19-23. Later, “the messages can be played back through the speaker 410 and display 416,” *id.* at 22:1-3. The logic described can instruct “the recording electronics 420 to play the outgoing message [stored in memory] which is sent out [via] connection 104 to a remote terminal,” *id.* at 21:48-67. Connection 104 connects to a network, *id.* at 21:31-33. McNelley also discloses (1) “digital recording” can be used, *id.* at 12:36-39; (2) an “enhanced digitally-based telecamcorder may include microprocessors for operational functions,” *id.* at 20:54-66; and (3) “digital storage may be used as a computer peripheral with modem data transmission and reception of data . . .,” *id.* The memory described in McNelley is accessible for transmitting and displaying selected messages. First, “[s]ize may be reduced by replacing the greeting tape deck with a solid state device capable of recording and playing back relatively short greeting whose signal contains both audio and images.” *Id.* at 12:26-29. Second, “Multiple greetings

may be accessed through a menu system with multiple message ‘boxes’ designated for receiving incoming messages.” *Id.* at 13:49-52. Because the digital video (audio and visual) message can be recorded and played back, and the memory stores the messages, the memory is accessible for transmitting and displaying selected messages. *Id.* at 11:23-28. As described above, McNelley discloses the subject matter of the recited claim limitation as understood by a person of ordinary skill in the art.

74. McNelley also discloses the claimed selectivity by allowing selection between two different modes: (1) camcorder mode; and (2) teleconferencing mode. McNelley discloses that “[t]he telecamcorder may be configured without the single-eye viewfinder 166 and then utilizes one display 100 as both teleconferencing display and viewfinder. . . . If the viewfinder, as well as the display screen, is provided by an electronic display, either the display screen or the viewfinder may be configured for use in both the camcorder mode and the teleconferencing mode.” *Id.* at 7:14-23. The camcorder controls 188 and the dialing controls 186 constitute a user interface. As McNelley discloses two different modes of operation: (1) camcorder mode; and (2) teleconferencing mode, a person of skill in the art would understand a user can selectively choose between the two modes, that a user can choose teleconferencing mode—permitting the user

to selectively display an image, e.g., his own image, on the display as a viewfinder and then transmit that image as part of the normal teleconferencing mode.

75. Umezawa discloses memory that is accessible for transmitting and displaying selected messages; first, it discloses that “In one aspect of performance of the present invention, there is provided a video telephone equipment, comprising signal processing means for permitting . . . a visual communication; a display panel which displays a received picture for the visual communication; a camera which takes a picture to-be-transmitted for the visual communication; a control panel through which a user of the video telephone equipment gives an operation command to the signal processing means,” Ex. 1004, Umezawa at 1:61-2:5. Umezawa also discloses that “[t]he handy type video telephone equipment 1 is furnished with a main circuit board 17 which includes a processor and a memory.” *Id.* at 5:55-56. Because the image frames in Umezawa can be recorded and played back, Umezawa describes buttons that are provided for changing-over the picture frames and scrolling the picture frame—and the memory operates with the processor on the stored messages, the memory therefore is accessible for transmitting and displaying selected messages. *Id.* at 8:30-35. The combination of McNelley and Umezawa discloses the claim limitation “accessible for selectively displaying in the display window and accessible for selectively transmitting over

the wireless telephone network the digitized framed image” as understood by a person of ordinary skill in the art.

76. Taking McNelley and adding Umezawa’s processing functionality that is operable with memory, is akin to adding known elements in predictable ways with predictable results; the combination would also continue to operate according to the intended purposes described in the two disclosures. And as discussed above, including Umezawa’s processor functionality and user interface (LCD touch control panel) in McNelley’s device would have been desirable at least for the purposes of providing a smaller and convenient hand held videoconferencing device that could be held in one hand and providing a more convenient means of user control via a user interface that was a LCD touch control panel. *See, e.g.*, Ex. 1003, McNelley at Figs. 8, 10-12; Ex. 1004, Umezawa at 1:36-40, 8:23-29, 10:3-22, Fig. 7. Combining Umezawa and McNelley was obvious to a person of ordinary skill in the art at the time of the invention and would encompass the claims limitation “accessible for selectively displaying in the display window and accessible for selectively transmitting over the wireless telephone network the digitized framed image.”

j. Claim 1: “a user interface for a user interface for enabling a user to select the image data signal for viewing and transmission”

77. Umezawa discloses a user interface that allows for selecting image data signal for viewing and transmission: (1) “A display panel 11, a

transmission/reception key 12, a termination key 13, a control panel 14, function keys 15, and a microphone 16 are arranged on the front surface of the body 2, in addition to the ear pad 4,” Ex. 1004, Umezawa at 5:46-49; (2) “The control panel 14 in this embodiment is made of liquid-crystal panel which is furnished with a touch panel, and which displays ten-keys and several operation keys within a rectangular compartment,” *id.* at 8:23-26; (3) “As best shown in FIG. 1, the function keys 15 consist of a button 15a for changing-over the visual telephone function and vocal telephone function of the equipment 1, a button 15b for changing-over the picture frames of the control panel 14, and buttons 15c, 15d for scrolling the picture frame of the control panel 14,” *id.* at 8:30-35; (4) “As shown in FIG. 1, a pause button 37 is provided at the rearmost end of the camera 3. When the pause button 37 is depressed under the telephone conversation based on the visual telephonic communication function of the equipment 1, the photographing operation of the camera 3 (or the transmission of a photographed picture) is temporarily stopped,” *id.* at 8:6-12; (5) “In a case where the user operates the equipment 1 as a video telephone set, he/she grasps the grip 35 in his/her left hand and manipulates the pertinent components with his/her right hand. . . . Besides, he/she turns the camera 3 to the position of a desired angle (refer to FIG. 7). Subsequently, he/she depresses the transmission/reception key 12 to bring the display panel 11 and the control panel 14 into the ON states thereof. Further,

he/she selects the visual telephone function by manipulating the function change-over button 15a. Thereafter, he/she enters the telephone No. of the opposite party by fingering the ten-keys displayed on the control panel 14. Since the entered telephone No. of the opposite party is displayed on the display panel 11, the user acknowledges it. Lastly, the user depresses the transmission/reception key 12. Thus, the transmission to the opposite party of the entered telephone No. is started,” *id.* at 10:3-22; and (6) “Therefore, the user can perform, not only a visual communication which is based on the photographing of his/her face, but also a visual communication during which the third party or a scene is being photographed;” *id.* at 10:35-39. Umezawa’s user interface via the visual telephone function can send images, and the photographic function allows for viewing images retrieved from memory. Thus, the combination of Umezawa and McNelley discloses the subject matter of the claim limitation to a person of ordinary skill in the art.

78. Taking McNelley and adding the processor functionality and user interface described in Umezawa would be adding known elements in predictable ways, with a predictable outcome. The McNelley-Umezawa combination would also to continue to operate according to their described intended purposes. Finally, including Umezawa’s processor functionality and user interface (LCD touch control panel) to McNelley’s device would have provided a smaller handheld

videoconferencing device that (1) could be held in one hand and (2) provide a more convenient way to control the device, via the user interface consisting of a LCD touch control panel. *See, e.g.*, Ex. 1003, McNelley at Figs. 8, 10-12; Ex. 1004, Umezawa at 1:36-40, 8:23-29, 10:3-22, Fig. 7. Therefore, to a person of ordinary skill in the art at the time of the invention combining Umezawa and McNelley would have been obvious, and encompasses this claim limitation.

- k. Claim 1: “a telephonic system in the housing for sending and receiving digitized audio signals and for sending the image data signal”

79. McNelley discloses a “camcorder (telecorder) of the present invention contains an integral video-phone capable of receiving and sending teleconferencing signals and includes a built in display to view an incoming teleconferencing signal and a video pickup device that can produce an image of the operator for transmissions during teleconferencing.” Ex. 1003, McNelley at 5:1-6. McNelley discloses that “digital recording” can be used and that an “enhanced digitally-based telecorder may include microprocessors for operational functions.” *Id.* at 12:36-39, 20:54-58. McNelley discloses a cellular telephone in the housing as discussed above, e.g., handset 174 with dialing controls 186 in housing 148.

80. “Fig. 9 shows a left side view of the telecorder illustrated in Fig. 8. This figure shows the dialing controls 186 and the telecorder controls 188

built into the main housing 148,” *id.* at 8:10-13. As shown in these figures and text above, McNelley discloses an integral video phone with a telephonic system via which the image and audio data is sent. McNelley discloses the subject matter of the recited claimed limitation—“a telephonic system in the housing for sending and receiving digitized audio signals and for sending the image data signal”—to a person of ordinary skill in the art.

1. Claim 1: “alphanumeric input keys in the housing for permitting manually input digitized alphanumeric signals to be input to the processor, the telephonic system further used for sending the digitized alphanumeric signals”

81. McNelley discloses alphanumeric keypads: “Fig. 9 shows a left side view of the telecamcorder illustrated in Fig. 8. This figure shows the dialing controls 186 and the telecamcorder controls 188 built into the main housing 148.” *Id.* at 8:10-13.

82. As shown in McNelley’s Figure 30, “video camera electronics 404 provides the video camera 406 with the power supply voltages and control signals and processes the output of the camera 406 into a final video signal to be fed to the controller 400.” *Id.* at 21:13-16. The “controller 400 routes the signal to a network access or communications electronics package 402.” *Id.* at 21:31-33. McNelley also discloses that “digital recording” can be used and that an “enhanced digitally-based telecamcorder may include microprocessors for operational

functions” and that “digital storage may be used as a computer peripheral with modem data transmission and reception of data” *Id.* at 12:36-39, 20:54-58.

83. McNelley also discloses use of a wireless network: “In the near future, video-phone networks will use one or a combination of phone lines, television cables and wireless networks (i.e., cellular phone systems). The telecamcorder is applicable to any type of network.” *Id.* at 14:16-18.

84. The handset 174 shown in McNelley’s Figure 9 includes dialing controls 186, also referred to as network access controls 186. *Id.* at 7:58-59, 8:11-12. These alphanumeric keypad buttons would have been familiar to a person of ordinary skill in the art at the time McNelley was submitted. Therefore, the input from the dialing controls 186 in a digital wireless telephonic system as taught in McNelley are digitized alphanumeric signals, and these digitized alphanumeric signals would be sent across the digital wireless network as disclosed in McNelley, e.g., for network access. As shown above, McNelley discloses the subject matter of the claim limitation—“alphanumeric input keys in the housing for permitting manually input digitized alphanumeric signals to be input to the processor, the telephonic system further used for sending the digitized alphanumeric signals”—as understood by a person of ordinary skill in the art.

85. Umezawa discloses “[a] display panel 11, a transmission/reception key 12, a termination key 13, a control panel 14, function keys 15, and a

microphone 16 are arranged on the front surface of the body 2, in addition to the ear pad. Ex. 1004, Umezawa at 5:46-49.

86. “[T]he control panel 14 being the liquid-crystal panel may well be replaced with a conventional button type panel or a numerical- key pad of sheet form.” *Id.* at 11:25-27. “The control panel 14 in this embodiment is made of a liquid-crystal panel which is furnished with a touch panel, and which displays ten-keys and several operation keys within a rectangular compartment. The user can enter an input by fingering the operation key which corresponds to his/her designation. It is to be understood, however, that the control panel 14 is not restricted to the liquid-crystal panel.” *Id.* at 8:23-29. “As best shown in Fig. 1, the function keys 15 consist of a button 15a for changing-over the visual telephone function and vocal telephone function of the equipment 1, a button 15b for changing-over the picture frames of the control panel 14, and buttons 15c, 15d for scrolling the picture frame of the control panel 14.” *Id.* at 8:30-35. Numbers inputted are shown on a display. *Id.* at 10:16-20. As described above, Umezawa discloses the use of an LCD touch keypad with keyed in numbers shown on the display and alphanumeric input keys for manually inputting digitized alphanumeric signals. *See id.* at 5:56-56. Digitized alphanumeric signals are sent over McNelley’s digital wireless network as explained above, as would be understood by a person of ordinary skill in the art. Thus, the combination of McNelley and

Umezawa disclose this limitation—“sending the digitized alphanumeric signals”—to a person of ordinary skill in the art.

87. Taking McNelley and adding Umezawa’s processor functionality and user interface would amount to adding known elements in predictable ways, yielding predictable results. It also allows the combination to continue to operate according to the intended purposes described in those disclosures. And including Umezawa’s processor functionality and LCD touch control panel (user interface) in McNelley’s device would have been desirable the purposes of providing a smaller and more convenient handheld videoconferencing device that could be held in one hand and providing a more convenient means of user control via the LCD touch control panel as a user interface, it would also have permitted allowing the user to verify the accuracy of numbers being input by displaying them on the display. *See, e.g.*, McNelley at Figs. 8, 10-12; Umezawa at 1:36-40, 8:23-29, 10:3-22, Fig. 7. Therefore, it would have been obvious to one of ordinary skill in the art to combine Umezawa with McNelley at the time of the invention, and the resulting combination discloses this claim limitation.

- m. Claim 1: “a wireless communications device adapted for transmitting any of the digitized signals to the compatible remote receiving station”

88. McNelley discloses that “digital recording” can be used and that an “enhanced digitally-based telecamcorder may include microprocessors for

operational functions” and that “digital storage may be used as a computer peripheral with modem data transmission and reception of data” Ex. 1003, McNelley at 12:36-39, 20:54-66. It also discloses that:

In the near future, video-phone networks will use one or a combination of phone lines, television cables and wireless networks (i.e., cellular phone systems). The telecamcorder is applicable to any type of network With a wireless network the telecamcorder can serve as a portable wireless teleconferencing terminal much like a portable cellular phone.

Ex. 1003, McNelley at 14:16-18, 14:28-31. As shown above, disclosed is a system that is both wireless and connects to a receiving station for a telephone network because it discloses a handheld teleconferencing device that operates like a portable cellular phone. Therefore, McNelley discloses the subject matter of the claim limitation—“a wireless communications device adapted for transmitting any of the digitized signals to the compatible remote receiving station”—to a person of ordinary skill in the art.

n. Claim 1: “a power supply for powering the system”

89. McNelley discloses that “the telecamcorder is designed to run on low voltage provided by batteries The telecamcorder may be powered either by the battery or by an electrical outlet.” Ex. 1003, McNelley at 18:49-51, 18:55-57. A power supply for power the system that is contained within the main housing 148 is also disclosed by McNelley. Therefore, McNelley discloses the subject matter

of the claim limitation—“a power supply for powering the system”— to a person of ordinary skill in the art.

90. A summary of the sections of McNelley and Umezawa cited above are included in the table below; it would have been obvious to combine the features from McNelley and Umezawa for reasons explained *supra*.

Claim 1 Limitation	Prior Art Teaching
<p>Claim 1 preamble (a): “A handheld self-contained cellular telephone and integrated image processing system”</p>	<p>“Fig. 8 shows a telecamcorder configured for use as a self-contained teleconferencing terminal as well as a camcorder.” McNelley (Ex. 1003) at 6:35-37.</p> <p>“In one mode, the operator holds the entire unit in front of him/her with the display 100, serving as the viewfinder.” <i>Id.</i> at 10:16-18.</p> <p>“FIG. 8 illustrates the telecamcorder in teleconferencing mode where the camera 102 is pointed in the same direction as the viewing side of the display 100....” <i>Id.</i> at 6:37-39.</p> <p>“FIG. 9 shows a left side view of the telecamcorder illustrated in FIG. 8. This figure shows the dialing controls 186 and the telecamcorder controls 188 built into the main housing 148. Built-in controls may serve in lieu of controls on the handset 174, or both sets of controls may be employed on a single telecamcorder.” <i>Id.</i> at 8:10-15.</p> <p>“In the near future, video-phone networks will use one or a combination of phone lines, television cables and wireless networks (i.e., cellular phone systems). The telecamcorder is applicable to any type of network.” <i>Id.</i> at 14:16-18.</p>
<p>Claim 1 preamble (b): “for both sending and receiving telephonic</p>	<p>“A camcorder (telecamcorder) of the present invention contains an integral video-phone capable of receiving and sending teleconferencing signals.” McNelley (Ex.</p>

Claim 1 Limitation	Prior Art Teaching
audio signals”	<p>1003) at 5:1-3.</p> <p>“With a wireless network the telecamcorder can serve as a portable wireless teleconferencing terminal much like a portable cellular phone.” <i>Id.</i> at 14: 28-31.</p>
<p>Claim 1 preamble (c): “for capturing a visual image and transmitting it to a compatible remote receiving station of a wireless telephone network, the system comprising:”</p>	<p>“A camcorder (telecamcorder) of the present invention contains an integral video-phone capable of receiving and sending teleconferencing signals and includes a built in display to view an incoming teleconferencing signal and a video pickup device that can produce an image of the operator for transmissions during teleconferencing.” McNelley (Ex. 1003) at 5:1-7.</p> <p>“Similarly, if the unit is used in the teleconferencing mode, the controller 400 routes the signal to a network access or communication electronics package 402. This electronics package establishes contact with a network and sends properly processed audio and video signals to the network through a connection 104 and received audio and video through the same connection 104.” <i>Id.</i> at 21:30-36 (referring to Fig. 30).</p> <p>“In the near future, video-phone networks will use one or a combination of phone lines, television cables and wireless networks (i.e., cellular phone systems). The telecamcorder is applicable to any type of network.” <i>Id.</i> at 14:16-18.</p>
<p>Claim 1 (d): “a manually portable housing;”</p>	<p>“Fig. 8 shows a telecamcorder configured for use as a self-contained teleconferencing terminal as well as a camcorder.” McNelley (Ex. 1003) at 6:35-37.</p> <p>“In one mode, the operator holds the entire unit in front of him/her with the display 100, serving as the viewfinder.” <i>Id.</i> at 10:16-18.</p>
<p>Claim 1 (e): “an integral image capture device comprising an electronic camera contained within the portable housing;”</p>	<p>“FIG. 8 illustrates the telecamcorder in teleconferencing mode where the camera 102 is pointed in the same direction as the viewing side of the display 100....” McNelley (Ex. 1003) at 6:37-39.</p>

Claim 1 Limitation	Prior Art Teaching
	<p>“To this end, digital video cameras employ circuit boards that include a charge coupled device (CCD) optical pickup. As electrical values are read from the CCD, the values are immediately converted into digital values and remain digital through all subsequent processing.” <i>Id.</i> at 13:5-8.</p>
<p>Claim 1 (f): “a display for displaying an image framed by the camera, the display being supported by the housing, the display and the electronic camera being commonly movable in the housing when the housing is moved by hand;”</p>	<p>“The display may be of any type, but thin lightweight displays, such as an active matrix LCD, are preferred.” McNelley (Ex. 1003) at 6:41-43.</p> <p>“The telecamcorder may be configured without the single-eye viewfinder 166 and then utilizes one display as both teleconferencing display and viewfinder.” <i>Id.</i> at 7:14-16.</p> <p>“The camera boom 156 is connected to a rotating hand- grip 160 by a pivot 158. The hand-grip 160 is, in turn, connected to a main housing 148 by a pivot 162. The hand-grip 160 serves as a battery housing and also contains controls 164 for various features such as camera zoom and record/playback functions. The pivot 162 allows the hand-grip 160 to rotate vertically, and thereby positions camera boom 156 as well. As a result, camera boom 156 can be adjusted vertically by the pivot 162 and horizontally by the pivot 158. Such a positioning arrangement allows the camera 102 to provide a multitude of framing options and, particularly, allows control over the conferee's own image during teleconferencing.” <i>Id.</i> at 6:59-7:3.</p>
<p>Claim 1 (g): “a processor in the housing for generating an image data signal representing the image framed by the camera;”</p>	<p>From the ‘754 Patent by McNelley et al.:</p> <p>“An enhanced digitally-based telecamcorder may include microprocessors for operational functions.” McNelley (Ex. 1003) at 20:54-55.</p> <p>“FIG. 30 represents a block diagram of a telecamcorder of the present invention;” <i>Id.</i> at 4:3-4.</p> <p>[Describing Figure 30] “The video camera electronics</p>

Claim 1 Limitation	Prior Art Teaching
	<p data-bbox="613 243 1430 405">404 provides the video camera 406 with proper supply voltages and control signals and processes the output of the camera 406 into a final video signal to be fed to the controller 400.” <i>Id.</i> at 4:3-4.</p> <p data-bbox="613 457 1430 743">“Recent advances in compression technology promise full motion, real-time teleconferencing using a single phone line, cable, or wireless broadcast. Such advanced digital compression formats use small ASIC chips for compression and decompression. These chips can readily be built into a telecamcorder.” <i>Id.</i> at 18:43-48.</p> <p data-bbox="613 800 1365 999">“Although most current camcorders use analog recording techniques, digital recording can be advantageously employed in the telecamcorder for both recording modes and for answering machine function.” <i>Id.</i> at 12:36-39.</p> <p data-bbox="613 1056 1430 1255">“An enhanced digitally-based telecamcorder may include microprocessors for operational functions. The digital storage may be used as a computer peripheral with modem data transmission and reception of data other than audio and video.” McNelley at 20:54-58.</p> <p data-bbox="613 1312 1227 1346">From the ‘507 Patent by Umezawa et al.:</p> <p data-bbox="613 1398 1430 1896">“In one aspect of performance of the present invention, there is provided a video telephone equipment, comprising signal processing means for permitting at least either of a vocal communication and a visual communication; a speaker which emits received speech for the vocal communication; a microphone which accepts speech to-be-transmitted for said vocal communication; a display panel which displays a received picture for the visual communication; a camera which takes a picture to-be-transmitted for the visual communication; a control panel through which a user of the video telephone equipment gives an</p>

Claim 1 Limitation	Prior Art Teaching
	<p>operation command to the signal processing means; and a casing which is provided with the display panel, the speaker and the microphone; the display panel being arranged between the speaker and the microphone on the casing.” Umezawa at 1:61-2:8.</p> <p>“The handy type video telephone equipment 1 is furnished with a main circuit board 17 which includes a processor and a memory” <i>Id.</i> at 5:55-56.</p>
<p>Claim 1 (h): “a memory associated with the processor for receiving and storing the digitized framed image”</p>	<p>“Although most current camcorders use analog recording techniques, digital recording can be advantageously employed in the telecamcorder for both recording modes and for answering machine function.” McNelley (Ex. 1003) at 12:36-39.</p> <p>“An enhanced digitally-based telecamcorder may include microprocessors for operational functions. The digital storage may be used as a computer peripheral with modem data transmission and reception of data other than audio and video.” <i>Id.</i> at 20:54-58.</p>
<p>Claim 1 (i): “accessible for selectively displaying in the display window and accessible for selectively transmitting over the wireless telephone network the digitized framed image”</p>	<p>“Although most current camcorders use analog recording techniques, digital recording can be advantageously employed in the telecamcorder for both recording modes and for answering machine function.” McNelley (Ex. 1003) at 12:36-39.</p> <p>“An enhanced digitally-based telecamcorder may include microprocessors for operational functions. The digital storage may be used as a computer peripheral with modem data transmission and reception of data other than audio and video.” <i>Id.</i> at 20:54-58.</p>
<p>Claim 1 (j): “a user interface for enabling a user to select the image data signal for viewing and transmission;”</p>	<p><u>Umezawa</u></p> <p>“A display panel 11, a transmission/reception key 12, a termination key 13, a control panel 14, function keys 15, and a microphone 16 are arranged on the front</p>

Claim 1 Limitation	Prior Art Teaching
	<p>surface of the body 2, in addition to the ear pad 4.” Umezawa (Ex. 1004) at 5:46-49.</p> <p>“The control panel 14 in this embodiment is made of liquid-crystal panel which is furnished with a touch panel, and which displays ten-keys and several operation keys within a rectangular compartment.” <i>Id.</i> at 8:23-26.</p> <p>“As best shown in FIG. 1, the function keys 15 consist of a button 15a for changing-over the visual telephone function and vocal telephone function of the equipment 1, a button 15b for changing-over the picture frames of the control panel 14, and buttons 15c, 15d for scrolling the picture frame of the control panel 14.” <i>Id.</i> at 8:30-35.</p> <p>“As shown in FIG. 1, a pause button 37 is provided at the rearmost end of the camera 3. When the pause button 37 is depressed under the telephone conversation based on the visual telephonic communication function of the equipment 1, the photographing operation of the camera 3 (or the transmission of a photographed picture) is temporarily stopped.” <i>Id.</i> at 8:6-12.</p> <p>“In a case where the user operates the equipment 1 as a video telephone set, he/she grasps the grip 35 in his/her left hand and manipulates the pertinent components with his/her right hand.... Besides, he/she turns the camera 3 to the position of a desired angle (refer to FIG. 7). Subsequently, he/she depresses the transmission/reception key 12 to bring the display panel 11 and the control panel 14 into the ON states thereof. Further, he/she selects the visual telephone function by manipulating the function change-over button 15a. Thereafter, he/she enters the telephone No. of the opposite party by fingering the ten-keys displayed on the control panel 14. Since the entered</p>

Claim 1 Limitation	Prior Art Teaching
	<p>telephone No. of the opposite party is displayed on the display panel 11, the user acknowledges it. Lastly, the user depresses the transmission/reception key 12. Thus, the transmission to the opposite party of the entered telephone No. is started.” <i>Id.</i> at 10:3-22.</p> <p>“Therefore, the user can perform, not only a visual communication which is based on the photographing of his/her face, but also a visual communication during which the third party or a scene is being photographed.” <i>Id.</i> at 10:35-39.</p>
<p>Claim 1 (k): “a telephonic system in the housing for sending and receiving digitized audio signals and for sending the image data signal”</p>	<p>“A camcorder (telecorder) of the present invention contains an integral video-phone capable of receiving and sending teleconferencing signals and includes a built-in display to view an incoming teleconferencing signal and a video pickup device that can produce an image of the operator for transmissions during teleconferencing.” McNelley (Ex. 1003) at 5:1-7.</p>
<p>Claim 1 (l): “alphanumeric input keys in the housing for permitting manually input digitized alphanumeric signals to be input to the processor, the telephonic system further used for sending the digitized alphanumeric signals”</p>	<p>“Fig. 9 shows a left side view of the telecorder illustrated in Fig. 8. This figure shows the dialing controls 186 and the telecorder controls 188 built into the main housing 148.” McNelley (Ex. 1003) at 8:10-13.</p> <p>[Describing Figure 30] “The video camera electronics 404 provides the video camera 406 with proper supply voltages and control signals and processes the output of the camera 406 into a final video signal to be fed to the controller 400.” <i>Id.</i> at 21:13-16.</p> <p>“[T]he controller 400 routes the signal to a network access or communication electronics package 402.” <i>Id.</i> at 21:31-33.</p> <p>“Although most current camcorders use analog recording techniques, digital recording can be advantageously employed in the telecorder for both recording modes and for answering machine function.” <i>Id.</i> at 12:36-39.</p>

Claim 1 Limitation	Prior Art Teaching
	<p data-bbox="613 283 1437 493">“An enhanced digitally-based telecamcorder may include microprocessors for operational functions. The digital storage may be used as a computer peripheral with modem data transmission and reception of data other than audio and video.” <i>Id.</i> at 20:54-58.</p> <p data-bbox="613 535 1437 787">“In the near future, video-phone networks will use one or a combination of phone lines, television cables and wireless networks (i.e., cellular phone systems). The telecamcorder is applicable to any type of network.” <i>Id.</i> at 14:16-18; <i>see also id.</i> at 7:58-59, 8:11-12 (disclosing dialing controls 186).</p> <p data-bbox="613 829 1437 1039">“A display panel 11, a transmission/reception key 12, a termination key 13, a control panel 14, function keys 15, and a microphone 16 are arranged on the front surface of the body 2, in addition to the ear pad 4.” Umezawa (Ex. 1004) at 5:46-49.</p> <p data-bbox="613 1081 1437 1249">“[T]he control panel 14 being the liquid-crystal panel may well be replaced with a conventional button type panel or a numerical-key pad of sheet form.” <i>Id.</i> at 11:25-27.</p> <p data-bbox="613 1291 1437 1648">“The control panel 14 in this embodiment is made of a liquid-crystal panel which is furnished with a touch panel, and which displays ten-keys and several operation keys within a rectangular compartment. The user can enter an input by fingering the operation key which corresponds to his/her designation. It is to be understood, however, that the control panel 14 is not restricted to the liquid-crystal panel.” <i>Id.</i> at 8:23-29.</p> <p data-bbox="613 1690 1437 1900">“As best shown in FIG. 1, the function keys 15 consist of a button 15a for changing-over the visual telephone function and vocal telephone function of the equipment 1, a button 15b for changing-over the picture frames of the control panel 14, and buttons</p>

Claim 1 Limitation	Prior Art Teaching
	<p>15c, 15d for scrolling the picture frame of the control panel 14.” <i>Id.</i> at 8:30-35.</p> <p>“Thereafter, he/she enters the telephone No. of the opposite party by fingering the ten-keys displayed on the control panel 14. Since the entered telephone No. of the opposite party is displayed on the display panel 11, the user acknowledges it.” <i>Id.</i> at 10:16-20.</p> <p>“The handy type video telephone equipment 1 is furnished with a main circuit board 17 which includes a processor and a memory” <i>Id.</i> at 5:55-56.</p>
<p>Claim 1 (m): “a wireless communications device adapted for transmitting any of the digitized signals to the compatible remote receiving station”</p>	<p>From the ‘754 Patent by McNelley et al.:</p> <p>“Although most current camcorders use analog Recording techniques, digital recording can be advantageously employed in the telecamcorder for both recording modes and for answering machine function.” McNelley (Ex. 1003) at 12:36-39.</p> <p>“An enhanced digitally-based telecamcorder may include microprocessors for operational functions. The digital storage may be used as a computer peripheral with modem data transmission and reception of data other than audio and video.” <i>Id.</i> at 20:54-58.</p> <p>“In the near future, video-phone networks will use one or a combination of phone lines, television cables and wireless networks (i.e., cellular phone systems). The telecamcorder is applicable to any type of network With a wireless network the telecamcorder can serve as a portable wireless teleconferencing terminal much like a portable cellular phone.” <i>Id.</i> at 14:16-18, 14:28-31.</p>
<p>Claim 1 (n): “a power supply for powering the system”</p>	<p>“[T]he telecamcorder is designed to run on low voltage provided by batteries The telecamcorder may be powered either by the battery or by an electrical outlet” McNelley (Ex. 1003) at 18:49-51, 18:55-57</p>

2. **Dependent Claim 2 “wherein the display for framing the image to be captured by the image capture device is operable to display the image at the system whereby the image can be viewed and framed prior to capture in the memory”**

91. A viewfinder would have been known to a person of ordinary skill in the art as a viewfinder as a display that shows an image for viewing prior to capture in a camera. McNelley discloses that “the telecamcorder . . . then utilizes one display 100 as both teleconferencing display and viewfinder.” Ex. 1003, McNelley at 7:14-16; *see also id.* at 12:36-39, 20:54-66. Therefore, McNelley discloses the subject matter of claim 2 to a person of ordinary skill in the art.

3. **Dependent Claim 3 “wherein the display is operable to display for viewing alphanumeric messages input at the alphanumeric keys”**

92. The McNelley device includes a set of input keys in the housing which permit alphanumeric signals to be manually input by an operator. As illustrated in Figure 9, “the dialing controls 186 and the telecamcorder controls 188 [are] built into the main housing 148. Built-in controls may serve in lieu of controls on the handset 174.” *Id.* at Fig. 9, 8:10-15. One of ordinary skill in the art would have understood these controls to allow for the alphanumeric signals to be manually input into the McNelley device by an operator.

93. Although McNelley does not expressly disclose that the alphanumeric signals would be presented in the display for viewing by the operator, it was

conventional in the art to have control inputs displayed on a display (such as an LCD), particularly if such a display is already present on the device and is capable of displaying such signals. One of ordinary skill in the art would have understood the McNelley device's display to be capable of displaying alphanumeric signals. *See, e.g., id.* at 22:1-3. Thus, it would have been obvious to one of ordinary skill in the art for the input from controls 188 to be displayed on the provided display.

94. To the extent this limitation is not fully disclosed and rendered obvious by the disclosure in McNelley combined with the understanding of one ordinarily skilled in the art, it is disclosed by Umezawa. The Umezawa patent discloses entering telephone numbers on a user interface for its video telephone, whereby the entered numbers are displayed on display control panel 14. Ex. 1004, Umezawa patent, at 10:3-22. Thus, Umezawa expressly discloses the use of an LCD keypad in which the alphanumeric numbers that are input via the keypad are displayed on a display. As a result, the combination of Umezawa's user interface with the McNelley device discloses and renders obvious this limitation of the asserted claim.

95. Moreover, one of ordinary skill would have been motivated to combine Umezawa's user input with the McNelley device. As described above, Umezawa's user interface functionality allows for size reduction and more convenient hand-held operation, problems that McNelley was interested in solving.

Accordingly, it would have been obvious to one of ordinary skill in the art to combine McNelley with Umezawa to achieve the claimed features.

4. **Dependent Claim 4 “removable memory module in addition to the memory, said removable memory able to be removeably housed in the housing for storing captured image data signals”**

96. McNelley discloses a “removable recording medium 209 is placed into the telecamcorder through a door 212 which is released by a latch 214 and then closed for recording” Ex. 1003, McNelley at 8:38-41.

97. McNelley discloses that “[a] holographic storage device is manufactured by Tamarack Storage Devices and this or similar technology promises to be the most advantageous of all the digital storage mediums because of the low power consumption, removability, small physical size, large storage capacity and data access speeds similar to that of a conventional hard drive.” *Id.* at 12:54-60. This removable digital storage medium would have been understood to be capable of/used for storing digital image data, apart from any other memory used in the system, by a person of ordinary skill in the art. Therefore, McNelley discloses the subject matter of the claim limitation to a person of ordinary skill in the art—“removable memory module in addition to the memory, said removable memory able to be removeably housed in the housing for storing captured image data signals”—and renders the subject matter of claim 4 obvious to a person of ordinary skill in the art.

5. **Dependent Claim 5 “wherein the display is operable to display for viewing incoming image data signals”**

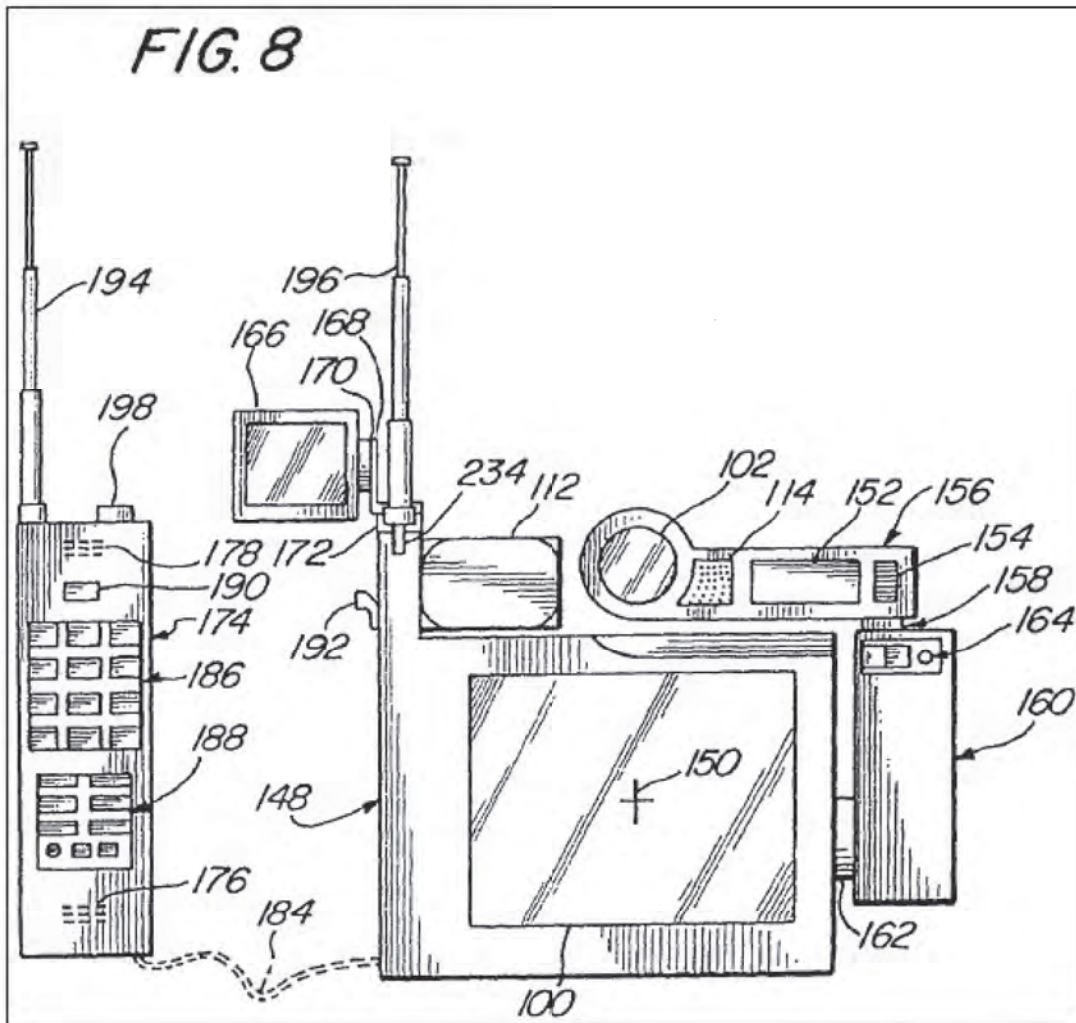
98. McNelley discloses a display 100 for use as both a teleconferencing display and viewfinder. *Id.* at 7:14-16. McNelley also discloses a “camcorder (telecamcorder) of the present invention contains an integral video-phone capable of receiving and sending teleconferencing signals.” *Id.* at 5:1-3. McNelley also discloses that “The device is equipped with communication electronics that establish a connection over a network, and then transmits video and audio signals from the device while displaying video signals and reproducing audio signals that arrive over the network.” *Id.* at Abstract. Therefore, McNelley discloses this limitation—“wherein the display is operable to display for viewing incoming image data signals”—as understood by a person of ordinary skill in the art.

6. **Independent Claim 6**

- a. Claim 6 preamble: “A handheld cellular telephone having an integrated electronic camera”

99. McNelley states that “it is the object of this present invention to provide a device that is both a portable hand-held camcorder and is also a complete teleconferencing device that comprises audio and video-phone circuitry and audio and video answering capability.” Ex. 1003, McNelley at 2:43-47 (emphasis added). McNelley discloses “a telecamcorder configured for use as a self-contained teleconferencing terminal as well as a camcorder.” *Id.* at 6:35-37. This device is consistently described as being handheld, for example, “[i]n one mode,

the operator holds the entire unit in front of him/her with the display 100, serving as the viewfinder.” *Id.* at 10:16-18. Fig. 8, reproduced below, shows that the camcorder of McNelley is hand-held, using “hand-grip 160.” *Id.* at 6:60.



100. Moreover, McNelley also discloses a cellular telephone: “[i]n the near future, video-phone networks will use one or a combination of phone lines, television cables and wireless networks (i.e., cellular phone systems). The telecamcorder is applicable to any type of network.” *Id.* at 14:16-18. McNelley discloses the telecamcorder “where the camera 102 is pointed in the same direction

as the viewing side of the display...” *Id.* at 6:37-39. “FIG. 9 shows a left side view of the telecamcorder illustrated in FIG. 8. This figure shows the dialing controls 186 and the telecamcorder controls 188 built into the main housing 148. Built-in controls may serve in lieu of controls on the handset 174, or both sets of controls may be employed on a single telecamcorder.” *Id.* at 8:10-15. McNelley thus discloses “a handheld cellular telephone having an integrated electronic camera” to a person of ordinary skill in the art.

b. Claim 6 preamble: “for both sending and receiving telephonic audio signals”

101. The McNelley patent discloses that the “camcorder (telecamcorder) of the present invention contains an integral video-phone capable of receiving and sending teleconferencing signals.” *Id.* at 5:1-3. The disclosed camcorder is also capable of sending and receiving audio because “with a wireless network the telecamcorder can serve as a portable wireless teleconferencing terminal much like a portable cellular phone.” *Id.* at 14:28-31. Because a person of ordinary skill in the art would understand that when the McNelley camcorder operates as a portable cellular phone, it necessarily is sending and receiving audio signals, McNelley discloses this claim limitation.

c. Claim 6 preamble: “for capturing a visual image”

102. McNelley discloses a telecamcorder with integrated video-phone receives and sends teleconferencing signals and “includes a built in display to view

an incoming teleconferencing signal and a video pickup device that can produce an image of the operator for transmissions during teleconferencing.” *Id.* at 5:1-7.

McNelley further discloses that “if the unit is used in the teleconferencing mode, the controller 400 routes the signal to a network access or communication electronics package 402. This electronics package establishes contact with a network and sends properly processed audio and video signals to the network through a connection 104 and received audio and video through the same connection 104.” *Id.* at 21:30-36 (referring to Fig. 30). McNelley thus discloses “capturing a visual image” to a person of ordinary skill in the art.

- d. Claim 6 preamble: “converting the visual image to a digitized image data signal”

103. McNelley discloses a processor in video camera electronics 404 of Fig. 30 which “processes the output of the camera 406 into a final video signal to be fed to the controller 400.” *Id.* at 21:13-16. The video camera electronics of Fig. 30 are contained within the telecamcorder housing. “To this end, digital video cameras employ circuit boards that include a charge coupled device (CCD) optical pickup. As electrical values are read from the CCD, the values are immediately converted into digital values and remain digital through all subsequent processing.” *Id.* at 13:5-9. McNelley thus discloses “converting the visual image to a digitized image data signal” to a person of ordinary skill in the art.

- e. Claim 6 preamble: “transmitting digitized image data signal via a cellular telephone network, the cellular telephone comprising:”

104. McNelley discloses that a “camcorder (telecamcorder) of the present invention contains an integral video-phone capable of receiving and sending teleconferencing signals and includes a built in display to view an incoming teleconferencing signal and a video pickup device that can produce an image of the operator for transmissions during teleconferencing.” *Id.* at 5:1-7. McNelley further discloses that “if the unit is used in the teleconferencing mode, the controller 400 routes the signal to a network access or communication electronics package 402. This electronics package establishes contact with a network and sends properly processed audio and video signals to the network through a connection 104 and received audio and video through the same connection 104.” *Id.* at 21:30-36 (referring to Fig. 30). McNelley also discloses use of a cellular wireless network: “In the near future, video-phone networks will use one or a combination of phone lines, television cables and wireless networks (i.e., cellular phone systems). The telecamcorder is applicable to any type of network.” *Id.* at 14:16-18. McNelley thus discloses “transmitting digitized image data signal via a cellular telephone network” to a person of ordinary skill in the art.

- f. Claim 6: “a manually portable housing supporting the cellular telephone and the integrated electronic camera, the cellular telephone and the integrated electronic camera being movable in common with the housing”

105. McNelley discloses that a “camcorder (telecamcorder) of the present invention contains an integral video-phone capable of receiving and sending teleconferencing signals...” *Id.* at 5:1-3. The disclosed camcorder is also capable of sending and receiving audio because “[w]ith a wireless network the telecamcorder can serve as a portable wireless teleconferencing terminal much like a portable cellular phone.” *Id.* at 14:28-31. Also, as reproduced above from McNelley, “Fig. 8 shows a telecamcorder configured for use as a self-contained teleconferencing terminal as well as a camcorder.” *Id.* at 6:35-37. This device is consistently described as being handheld, for example, “[i]n one mode, the operator holds the entire unit in front of him/her with the display 100, serving as the viewfinder.” *Id.* at 10:16-18. Moreover, a rotating hand grip 160 and pivots 158 and 160 permit horizontal and vertical movement for different positioning and framing orientations. *Id.* at 6:59-7:3. McNelley thus discloses “a manually portable housing supporting the cellular telephone and the integrated electronic camera, the cellular telephone and the integrated electronic camera being movable in common with the housing” to a person of ordinary skill in the art.

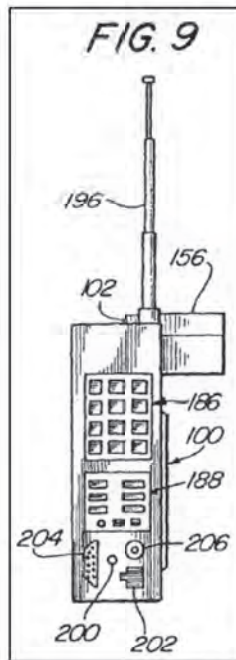
- g. Claim 6: “a cellular telephone in the housing, the cellular telephone further including a transmitter/receiver for transmitting and receiving audio telephone messages over a cellular telephone network”

106. McNelley discloses that a “camcorder (telecamcorder) of the present invention contains an integral video-phone capable of receiving and sending

teleconferencing signals.” *Id.* at 5:1-3. The disclosed camcorder is also capable of sending and receiving audio because “with a wireless network the telecamcorder can serve as a portable wireless teleconferencing terminal much like a portable cellular phone.” *Id.* at 14:28-31. McNelley discloses a cellular telephone in the housing as discussed above, e.g., handset 174 with dialing controls 186 in housing 148: “FIG. 9 shows a left side view of the telecamcorder illustrated in FIG. 8. This figure shows the dialing controls 186 and the telecamcorder controls 188 built into the main housing 148.” *Id.* at 8:10-13. The disclosed structure, operating as disclosed, as a portable cellular phone necessarily includes a transmitter and receiver sending and receiving audio and video digital data over a wireless network. McNelley discloses the subject matter of the recited claimed limitation to a person of ordinary skill in the art.

h. Claim 6: “a keypad for entering manually input alphanumeric signals to be transmitted over the cellular telephone network”

107. Fig. 9 of McNelley, reproduced below, “shows a left side view of the telecamcorder illustrated in Fig. 8. This figure shows the dialing controls 186 and the telecamcorder controls 188 built into the main housing 148. Built-in controls may serve in lieu of controls on the handset 174.” *Id.* at 8:10-15.



108. McNelley also discloses use of a wireless network: “In the near future, video-phone networks will use one or a combination of phone lines, television cables and wireless networks (i.e., cellular phone systems). The telecamcorder is applicable to any type of network.” *Id.* at 14:16-18. The handset 174 shown in Fig. 9 of McNelley includes dialing controls 186, also referred to as network access controls 186. *Id.* at 7:58-59, 8:11-12. These are conventional alphanumeric keypad buttons with which a person of ordinary skill in the art would have been well familiar at the time the ’871 patent was filed. Thus, the input from the dialing controls 186 in a wireless telephonic system as taught in McNelley are alphanumeric signals, and these digitized alphanumeric signals would be sent across the wireless network as disclosed in McNelley, *e.g.*, for network access. Thus, McNelley discloses “a keypad for entering manually input alphanumeric

signals to be transmitted over the cellular telephone network” as understood by a person of ordinary skill in the art.

- i. Claim 6: “a display window for viewing the manually input alphanumeric signals”

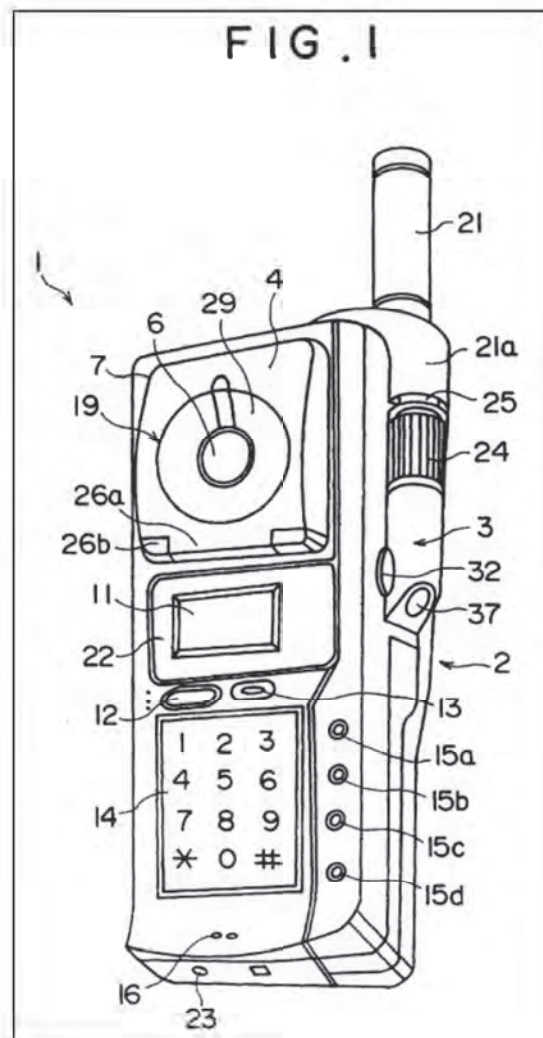
109. The telecamcorder of McNelley contains a display 100, as shown in Fig. 8, reproduced above, and that “display may be of any type, but thin lightweight displays, such as an active matrix LCD, are preferred. *Id.* at 6:41-43. As disclosed with respect to the preamble, the camera is handheld and portable and the camera is included in that unit. The display is operable as a “viewfinder.” *Id.* at 7:14-16. To the extent that McNelley does not explicitly disclose that its display is “for viewing the manually input alphanumeric signals,” a person of ordinary skill in the art would have nevertheless appreciated at the time of the ’871 invention that it was conventional to display alphanumeric signals on the display as the user was entering such alphanumeric signals, e.g., on the keypad of the McNelley telecamcorder.

110. Umezawa is an example of a system that has “a display window for viewing the manually input alphanumeric signals.” Fig. 1 of Umezawa, reproduced below, shows the disclosed video telephone. Umezawa teaches:

The control panel 14 in this embodiment is made of a liquid-crystal panel which is furnished with a touch panel, and which displays ten-keys and several operation keys within a rectangular compartment. The user can enter an input by fingering the operation key which

corresponds to his/her designation. It is to be understood, however, that the control panel 14 is not restricted to the liquid-crystal panel.”

Ex. 1004, Umezawa at 8:23-29. A person of ordinary skill in the art would understand control panel 14 in Umezawa to be an example of “a keypad for entering manually input alphanumeric signals to be transmitted over the cellular telephone network.”



111. Umezawa discloses that the video telephone contains “the display panel 11 which is comprised of a liquid crystal” and depicted in Fig. 1 above. *Id.* at 5:59-60. Umezawa discloses that:

In a case where the user operates the equipment 1 as a video telephone set, he/she grasps the grip 35 in his/her left hand and manipulates the pertinent components with his/her right hand. . . . Subsequently, he/she depresses the transmission/reception key 12 to bring the display panel 11 and the control panel 14 into the ON states thereof. Further, he/she selects the visual telephone function by manipulating the function change-over button 15a. Thereafter, he/she enters the telephone No. of the opposite party by fingering the ten-keys displayed on the control panel 14. Since the entered telephone No. of the opposite party is displayed on the display panel 11, the user acknowledges it. Lastly, the user depresses the transmission/reception key 12. Thus, the transmission to the opposite party of the entered telephone No. is started.

Id. at 10:3-22. Umezawa thus explicitly discloses an alphanumeric input (the keys pressed on control panel 14) displayed on display panel 11. This explicit disclosure in Umezawa of the input to the alphanumeric control panel being displayed on the LCD display is further confirmation that such operation was conventional at the time of the filing of the '871 patent. It would have been obvious to a person of ordinary skill in the art to include this functionality into McNelley's device so that the operator could confirm that the numbers being input were accurate. Also, as explained previously, it would have been obvious to a person of ordinary skill in the art to have included Umezawa's user interface and processor into McNelley's system. In particular, this combination would have

amounted to adding well-known elements in predictable ways with predictable results, and would allow the combination to continue to operate according to the intended purposes described in those disclosures. Also, as mentioned previously, including Umezawa's processor functionality and LCD touch control panel (user interface) in McNelley's device would have been desirable at least for the purposes of providing a smaller and more convenient handheld videoconferencing device that could be held in one hand and providing a more convenient means of user control via the LCD touch control panel as a user interface. *See, e.g.*, McNelley (Ex. 1003) at FIGS. 8, 10-12; Umezawa (Ex. 1004) at 1:36-40, 8:23-29, 10:3-22, FIG. 7. The combination of Umezawa and McNelley would have been obvious to a person of ordinary skill in the art at the time the '871 patent was filed and renders the subject matter of this limitation obvious to a person of ordinary skill in the art.

j. Claim 6: "an integral electronic camera in the housing, the camera for visually framing a visual image to be captured"

112. McNelley discloses a telecamcorder "where the camera 102 is pointed in the same direction as the viewing side of the display..." McNelley (Ex. 1003) at 6:37-39. "In one mode, the operator holds the entire unit in front of him/her with the display 100, serving as the viewfinder." *Id.* at 10:16-18. McNelley's telecamcorder includes a display 100 for viewing an image, which is also operable as a view finder. *Id.* at 6:41- 43; 7:14-16. At the time the '871 patent was filed, a viewfinder was conventionally used to frame an image so as to choose the desired

scene for the image/picture to be taken. Thus, the McNelley telecamcorder uses the display as a viewfinder and a viewfinder displays an image formed by the camera. McNelley thus discloses “an integral electronic camera in the housing, the camera for visually framing a visual image to be captured” to a person of ordinary skill in the art.

- k. Claim 6: “a processor associated with the electronic camera for capturing and digitizing the framed image in a format for transmission over the cellular telephone network via the cellular telephone”

113. McNelley discloses a processor in video camera electronics 404 of Fig. 30 which “processes the output of the camera 406 into a final video signal to be fed to the controller 400.” *Id.* at 21:13-16. The video camera electronics of Fig. 30 are contained within the telecamcorder housing: “An enhanced digitally-based telecamcorder may include microprocessors for operational functions.” *Id.* at 20:54-55. *See also id.* at 4:3-4 regarding description of Fig 30. Also, McNelley teaches: “Recent advances in compression technology promise full motion, real-time teleconferencing using a single phone line, cable or wireless broadcast. Such advanced digital compression formats use small ASIC chips for compression and decompression. These chips can readily be built into the telecamcorder.” *Id.* at 18:43-48. The McNelley patent also discloses that “digital recording” can be used in the telecamcorder and that an “enhanced digitally-based telecamcorder may include microprocessors for operational functions” and that “digital storage may be

used as a computer peripheral with modem data transmission and reception of data” *Id.* at 12:36-39 and 20:54-58. Digitization of image data is also disclosed: “To this end, digital video cameras employ circuit boards that include a charge coupled device (CCD) optical pickup. As electrical values are read from the CCD, the values are immediately converted into digital values and remain digital through all subsequent processing.” *Id.* at 13:5-9. A person of ordinary skill in the art would have understood at the time the ’871 patent was filed that data corresponding to digital images is processed by digital electronics. Also, McNelley discloses use of a wireless cellular network: “In the near future, video-phone networks will use one or a combination of phone lines, television cables and wireless networks (i.e., cellular phone systems). The telecamcorder is applicable to any type of network.” *Id.* at 14:16-18. The unit includes a controller 400 that “routes the teleconferencing signal to a network access or communication electronics package 402,” which establishes contact with a network and sends and receives audio and video signals to/from the wireless cellular network. *Id.* at 21:30-36 (referring to Fig. 30); 14:16-18. Thus, McNelley discloses “a processor associated with the electronic camera for capturing and digitizing the framed image in a format for transmission over the cellular telephone network via the cellular telephone” as understood by a person of ordinary skill in the art.

1. Claim 6: “a memory associated with the processor for receiving and storing the digitized framed image”

114. McNelley discloses that “digital recording” can be used (*id.* at 12:36-39) and that an “enhanced digitally-based telecamcorder” may include “microprocessors for operational functions” and that “digital storage may be used as a computer peripheral with modem data transmission and reception of data” *Id.* at 20:54-66. McNelley further discloses that the “recording electronics 420 processes the signals for storage in memory 422. The memory 422 actually comprises any type of data recording medium ranging from tape and disks to solid state microelectronic memory.” *Id.* at 21:23-26. This digital storage medium conventionally would have been understood by a person of ordinary skill in the art to be capable of, and used for, storing digital image data. Where digital memory is used with a processor in the creation of digital video image data, a person of ordinary skill in the art would have known the memory receives and stores the framed digital image. McNelley discloses the subject matter of the recited claim limitation to a person of ordinary skill in the art.

- m. Claim 6: “accessible for selectively displaying in the display window and accessible for selectively transmitting over the cellular telephone network the digitized framed image”

115. McNelley discloses that “digital recording” can be used (*Id.* at 12:36-39) and that an “enhanced digitally-based telecamcorder may include “microprocessors for operational functions” and that “digital storage may be used as a computer peripheral with modem data transmission and reception of data”

Id. at 20:54-66. McNelley also discloses use of a wireless network: “In the near future, video-phone networks will use one or a combination of phone lines, television cables and wireless networks (i.e., cellular phone systems). The telecamcorder is applicable to any type of network.” *Id.* at 14:16-18. The McNelley patent further discloses that when “the telecamcorder is being used to make a recording, the controller 400 conditions the audio and video signals, if necessary, and ... the recording electronics 420 processes the signals for storage in memory 422.” *Id.* at 21:19-23. Later, “the messages can be played back through the speaker and display 416.” *Id.* at 22:1-3. Also, the logic can order “the recording electronics 420 to play the outgoing message [which was stored in memory] which is sent out [over] connection 104 to a remote terminal.” *Id.* at 21:64-67. Connection 104 connects to a network. *Id.* at 21:31-33. “With a wireless network the telecamcorder can serve as a portable wireless teleconferencing terminal much like a portable cellular phone.” *Id.* at 14:28-31. McNelley further discloses that “[s]ize may be reduced by replacing the greeting tape deck with a solid state device capable of recording and playing back relatively short greeting whose signal contains both audio and images.” *Id.* at 12:26-29. Additionally, McNelley teaches that “[m]ultiple greetings may be accessed through a menu system with multiple message “boxes” designated for receiving incoming messages” *Id.* at 13:49-52. Because the digital video (audio and visual)

message can be recorded and played back (*id.* at 11:23-28), and the memory stores the messages, the memory is accessible for selectively displaying and then selectively and subsequently transmitting and selected messages, which in McNelley's teleconferencing context include images as well as audio.

116. McNelley also discloses the claimed selectivity by virtue of being able to select between two different modes – camcorder mode and teleconferencing mode. McNelley teaches that “[t]he telecamcorder may be configured without the single-eye viewfinder 166 and then utilizes one display 100 as both teleconferencing display and viewfinder. . . . If the viewfinder, as well as the display screen, is 20 provided by an electronic display, either the display screen or the viewfinder may be configured for use in both the camcorder mode and the teleconferencing mode.” *Id.* at 7:14-23. The camcorder controls 188 and the dialing controls 186 constitute a user interface. Since McNelley expressly discloses two different modes of operation – camcorder mode and teleconferencing mode –as noted above, person of ordinary skill in the art would have understood that these controls permit a user to selectively choose between the modes. A user can selectively choose teleconferencing mode, in which case McNelley's user interface thereby permits the user to selectively display an image, e.g., his own image, on the display as a viewfinder and then subsequently transmit that image as part of the normal teleconferencing mode. Thus, McNelley discloses the subject

matter of the recited claim limitation as understood by a person of ordinary skill in the art.

- n. Claim 6: “a user interface for enabling a user to selectively display the digitized framed image in the display window and subsequently transmit the digitized framed image over the cellular telephone network”

117. To the extent that McNelley does not explicitly disclose “a user interface for enabling a user to selectively display the digitized framed image in the display window,” Umezawa discloses this limitation:

In a case where the user operates the equipment 1 as a video telephone set, he/she grasps the grip 35 in his/her left hand and manipulates the pertinent components with his/her right hand. . . . Besides, he/she turns the camera 3 to the position of a desired angle (refer to FIG. 7). Subsequently, he/she depresses the transmission/reception key 12 to bring the display panel 11 and the control panel 14 into the ON states thereof. Further, he/she selects the visual telephone function by manipulating the function change-over button 15a. Thereafter, he/she enters the telephone No. of the opposite party by fingering the ten-keys displayed on the control panel 14. Since the entered telephone No. of the opposite party is displayed on the display panel 11, the user acknowledges it. Lastly, the user depresses the transmission/reception key 12. Thus, the transmission to the opposite party of the entered telephone No. is started.

Umezawa patent (Ex. 1004) at 10:3-22. “Therefore, the user can perform, not only a visual communication which is based on the photographing of his/her face, but also a visual communication during which the third party or a scene is being photographed.” *Id.* at 10:35-39. This functionality permits a user to display on the display viewfinder a digitized framed image of himself, and then subsequently

transmit that digitized framed image as part of a normal teleconferencing mode. Umezawa discloses the use of a user interface in the context of a video phone device to select images for display and subsequent transmission over the cellular network. Umezawa thus discloses the subject matter of the recited claim limitation to a person of ordinary skill in the art.

118. Adding Umezawa's user interface and processor functionality, which is operable with memory, to McNelley would amount to adding well-known elements in predictable ways with predictable results, and would allow the combination to continue to operate according to the intended purposes described in those disclosures. Also, as mentioned previously, including Umezawa's processor functionality and LCD touch control panel (user interface) in McNelley's device would have been desirable at least for the purposes of providing a smaller and more convenient handheld videoconferencing device that could be held in one hand and providing a more convenient means of user control via the LCD touch control panel as a user interface. *See, e.g.*, McNelley patent (Ex. 1003) at FIGS. 8, 10-12; Umezawa patent (Ex. 1004) at 1:36-40, 8:23-29, 10:3-22, FIG. 7. Thus, the combination of Umezawa and McNelley would have been obvious to a person of ordinary skill in the art at the time of the '871 invention and yields this claim limitation.

- o. Claim 6: "and an integrated power supply for powering both the cellular telephone and the camera."

119. McNelley discloses that “the telecamcorder is designed to run on low voltage provided by batteries. ... The telecamcorder may be powered either by the battery or by an electrical outlet....” McNelley patent (Ex. 1003) at 18:49-51, 18:55-57. McNelley discloses a power supply that is contained within the main housing 148. Thus, McNelley discloses the subject matter of the recited claim limitation to a person of ordinary skill in the art.

120. As explained above, it would have been obvious for a person of ordinary skill in the art to have combined the disclosures of McNelley and Umezawa at the time the '871 patent was filed, and the combined disclosures of the references teach all of the limitations of claim 6. Claim 6 as a whole would have been obvious to a person of ordinary skill in the art at the time the '871 patent was filed. A summary of the sections of McNelley and Umezawa cited above are presented in the table below, and it would have been obvious to combine the features from McNelley and Umezawa for reasons explained above.

Claim 6 Limitation	Prior Art Teaching
Claim 6 preamble (a): “A handheld cellular telephone having an integrated electronic camera”	“Fig. 8 shows a telecamcorder configured for use as a self-contained teleconferencing terminal as well as a camcorder.” McNelley patent (Ex. 1003) at 6: 35-37. “In one mode, the operator holds the entire unit in front of him/her with the display 100, serving as the viewfinder.” <i>Id.</i> at 10:16-18. “FIG. 8 illustrates the telecamcorder in teleconferencing mode where the camera 102 is pointed in the same direction as the viewing side of the

Claim 6 Limitation	Prior Art Teaching
	<p>display 100....” <i>Id.</i> at 6:37-39.</p> <p>“FIG. 9 shows a left side view of the telecamcorder illustrated in FIG. 8. This figure shows the dialing controls 186 and the telecamcorder controls 188 built into the main housing 148. Built-in controls may serve in lieu of controls on the handset 174, or both sets of controls may be employed on a single telecamcorder.” <i>Id.</i> at 8:10-15.</p> <p>“In the near future, video-phone networks will use one or a combination of phone lines, television cables and wireless networks (i.e., cellular phone systems). The telecamcorder is applicable to any type of network.” <i>Id.</i> at 14:16-18.</p>
<p>Claim 6 preamble (b): “for both sending and receiving telephonic audio signals”</p>	<p>“A camcorder (telecamcorder) of the present invention contains an integral video-phone capable of receiving and sending teleconferencing signals.” <i>Id.</i> at 5:1-3.</p> <p>“With a wireless network the telecamcorder can serve as a portable wireless teleconferencing terminal much like a portable cellular phone.” <i>Id.</i> at 14: 28-31.</p>
<p>Claim 6 preamble (c): “and for capturing a visual image,”</p>	<p>“A camcorder (telecamcorder) of the present invention contains an integral video-phone capable of receiving and sending teleconferencing signals and includes a built in display to view an incoming teleconferencing signal and a video pickup device that can produce an image of the operator for transmissions during teleconferencing.” <i>Id.</i> at 5:1-7.</p> <p>“Similarly, if the unit is used in the teleconferencing mode, the controller 400 routes the signal to a network access or communication electronics package 402. This electronics package establishes contact with a network and sends properly processed audio and video signals to the network through a connection 104 and received audio and video through the same connection 104.” <i>Id.</i> at 21:30-36 (referring to Fig. 30).</p>

Claim 6 Limitation	Prior Art Teaching
<p>Claim 6 preamble (d): “converting the visual image to a digitized image data signal”</p>	<p>“The video camera electronics 404 provides the video camera 406 with proper supply voltages and control signals and processes the output of the camera 406 into a final video signal to be fed to the controller 400.” <i>Id.</i> at 21:13-16 (regarding Fig. 30.)</p> <p>“To this end, digital video cameras employ circuit boards that include a charge coupled device (CCD) optical pickup. As electrical values are read from the CCD, the values are immediately converted into digital values and remain digital through all subsequent processing.” <i>Id.</i> at 13:5-9.</p>
<p>Claim 6 preamble (e): “and transmitting digitized image data signal via a cellular telephone network, the cellular telephone comprising:”</p>	<p>“A camcorder (telecamcorder) of the present invention contains an integral video-phone capable of receiving and sending teleconferencing signals and includes a built in display to view an incoming teleconferencing signal and a video pickup device that can produce an image of the operator for transmissions during teleconferencing.” <i>Id.</i> at 5:1-7.</p> <p>“Similarly, if the unit is used in the teleconferencing mode, the controller 400 routes the signal to a network access or communication electronics package 402. This electronics package establishes contact with a network and sends properly processed audio and video signals to the network through a connection 104 and received audio and video through the same connection 104.” <i>Id.</i> at 21:30-36 (referring to Fig. 30).</p> <p>“In the near future, video-phone networks will use one or a combination of phone lines, television cables and wireless networks (i.e., cellular phone systems). The telecamcorder is applicable to any type of network.” <i>Id.</i> at 14:16-18.</p>
<p>Claim 6 (f): “a manually portable housing supporting the cellular telephone and the</p>	<p>“A camcorder (telecamcorder) of the present invention contains an integral video-phone capable of receiving and sending teleconferencing signals and includes a built in display to view an incoming teleconferencing</p>

Claim 6 Limitation	Prior Art Teaching
<p>integrated electronic camera, the cellular telephone and the integrated electronic camera being movable in common with the housing;”</p>	<p>signal and a video pickup device that can produce an image of the operator for transmissions during teleconferencing.” <i>Id.</i> at 5:1-7.</p> <p>“With a wireless network the telecamcorder can serve as a portable wireless teleconferencing terminal much like a portable cellular phone.” <i>Id.</i> at 14: 28-31.</p> <p>“Fig. 8 shows a telecamcorder configured for use as a self-contained teleconferencing terminal as well as a camcorder.” <i>Id.</i> at 6:35-37.</p> <p>“In one mode, the operator holds the entire unit in front of him/her with the display 100, serving as the viewfinder.” <i>Id.</i> at 10:16-18.</p> <p>“The camera boom 156 is connected to a rotating hand- grip 160 by a pivot 158. The hand-grip 160 is, in turn, connected to a main housing 148 by a pivot 162. The hand-grip 160 serves as a battery housing and also contains controls 164 for various features such as camera zoom and record/playback functions. The pivot 162 allows the hand-grip 160 to rotate vertically, and thereby positions camera boom 156 as well. As a result, camera boom 156 can be adjusted vertically by the pivot 162 and horizontally by the pivot 158. Such a positioning arrangement allows the camera 102 to provide a multitude of framing options and, particularly, allows control over the conferee’s own image during teleconferencing.” <i>Id.</i> at 6:59-7:3.</p>
<p>Claim 6 (g): “a cellular telephone in the housing, the cellular telephone further including a transmitter/receiver for transmitting and receiving audio telephone messages</p>	<p>“A camcorder (telecamcorder) of the present invention contains an integral video-phone capable of receiving and sending teleconferencing signals and includes a built in display to view an incoming teleconferencing signal and a video pickup device that can produce an image of the operator for transmissions during teleconferencing.” <i>Id.</i> at 5:1-7.</p> <p>“In the near future, video-phone networks will use one</p>

Claim 6 Limitation	Prior Art Teaching
<p>over a cellular telephone network,”</p>	<p>or a combination of phone lines, television cables and wireless networks (i.e., cellular phone systems). The telecamcorder is applicable to any type of network.... With a wireless network the telecamcorder can serve as a portable wireless teleconferencing terminal much like a portable cellular phone.” <i>Id.</i> at 14:16-18, 14:28-31.</p> <p>“FIG. 9 shows a left side view of the telecamcorder illustrated in FIG. 8. This figure shows the dialing controls 186 and the telecamcorder controls 188 built into the main housing 148.” <i>Id.</i> at 8:10-13.</p>
<p>Claim 6 (h): “a keypad for entering manually input alphanumeric signals to be transmitted over the cellular telephone network,”</p>	<p><u>McNelley:</u></p> <p>“Fig. 9 shows a left side view of the telecamcorder illustrated in Fig. 8. This figure shows the dialing controls 186 and the telecamcorder controls 188 built into the main housing 148. Built-in controls may serve in lieu of controls on the handset 174.” <i>Id.</i> at 8:10-15.</p> <p>“In the near future, video-phone networks will use one or a combination of phone lines, television cables and wireless networks (i.e., cellular phone systems). The telecamcorder is applicable to any type of network.” <i>Id.</i> at 14:16-18; <i>see also id.</i> at 7:58-59, 8:11-12 (disclosing dialing controls 186).</p> <p><u>Umezawa:</u></p> <p>“The handy type video telephone equipment 1 is furnished with a main circuit board 17 which includes a processor and a memory....” Umezawa patent (Ex. 1004) at 5:55-56.</p> <p>“The control panel 14 in this embodiment is made of a liquid-crystal panel which is furnished with a touch panel, and which displays ten-keys and several operation keys within a rectangular compartment. The</p>

Claim 6 Limitation	Prior Art Teaching
	<p>user can enter an input by fingering the operation key which corresponds to his/her designation. It is to be understood, however, that the control panel 14 is not restricted to the liquid-crystal panel.” <i>Id.</i> at 8:23-29.</p> <p>“As best shown in FIG. 1, the function keys 15 consist of a button 15a for changing-over the visual telephone function and vocal telephone function of the equipment 1, a button 15b for changing-over the picture frames of the control panel 14, and buttons 15c, 15d for scrolling the picture frame of the control panel 14.” <i>Id.</i> at 8:30-35.</p> <p>“Therefore, the user can perform, not only a visual communication which is based on the photographing of his/her face, but also a visual communication during which the third party or a scene is being photographed.” <i>Id.</i> at 10:35-39.</p> <p>“A display panel 11, a transmission/reception key 12, a termination key 13, a control panel 14, function keys 15, and a microphone 16 are arranged on the front surface of the body 2, in addition to the ear pad 4.” Umezawa patent (Ex. 1004) at 5:46-49.</p> <p>“[T]he control panel 14 being the liquid-crystal panel may well be replaced with a conventional button type panel or a numerical-key pad of sheet form.” <i>Id.</i> at 11:25-27.</p> <p>“Thereafter, he/she enters the telephone No. of the opposite party by fingering the ten-keys displayed on the control panel 14. Since the entered telephone No. of the opposite party is displayed on the display panel 11, the user acknowledges it.” <i>Id.</i> at 10:16-20.</p>
Claim 6 (i): “and a display window for viewing the manually	<p><u>McNelly:</u></p> <p>“The display may be of any type, but thin lightweight</p>

Claim 6 Limitation	Prior Art Teaching
<p>input alphanumeric signals;”</p>	<p>displays, such as an active matrix LCD, are preferred.” McNelley patent (Ex. 1003) at 6:41-43.</p> <p>“The telecamcorder may be configured without the single-eye viewfinder 166 and then utilizes one display as both teleconferencing display and viewfinder.” <i>Id.</i> at 7:14-16.</p> <p>“Fig. 9 shows a left side view of the telecamcorder illustrated in Fig. 8. This figure shows the dialing controls 186 and the telecamcorder controls 188 built into the main housing 148. Built-in controls may serve in lieu of controls on the handset 174.” <i>Id.</i> at 8:10-15.</p> <p>“When the units owner returns later, the messages can be played back through the speaker and display 416.” <i>Id.</i> at 22:1-3.</p> <p>“The information is recorded in memory A 424.... The logic 428 orders the recording electronics 420 to play the outgoing message [which was stored in memory] which is sent out [over] connection 104 to a remote terminal.” <i>Id.</i> at 21:48-67.</p> <p>“Multiple greetings may be accessed through a menu system with multiple message “boxes” designated for receiving incoming messages” <i>Id.</i> at 13:49-52.</p> <p><u>Umezawa:</u></p> <p>“The handy type video telephone equipment 1 is furnished with a main circuit board 17 which includes a processor and a memory, a communication device 18 which includes a radio/video coded, a cord reel 19, the speaker 6, the display panel 11 which is comprised of a liquid crystal, a control circuit board 20, the microphone 16, a battery 90 which constitutes the</p>

Claim 6 Limitation	Prior Art Teaching
	<p>battery assembly 9, the antenna 21, and the camera 3.” Umezawa patent (Ex. 1004) at 5:55-56.</p> <p>“The control panel 14 in this embodiment is made of a liquid-crystal panel which is furnished with a touch panel, and which displays ten-keys and several operation keys within a rectangular compartment. The user can enter an input by fingering the operation key which corresponds to his/her designation. It is to be understood, however, that the control panel 14 is not restricted to the liquid-crystal panel.” <i>Id.</i> at 8:23-29.</p> <p>“In a case where the user operates the equipment 1 as a video telephone set, he/she grasps the grip 35 in his/her left hand and manipulates the pertinent components with his/her right hand.... Besides, he/she turns the camera 3 to the position of a desired angle (refer to FIG. 7). Subsequently, he/she depresses the transmission/reception key 12 to bring the display panel 11 and the control panel 14 into the ON states thereof. Further, he/she selects the visual telephone function by manipulating the function change-over button 15a. Thereafter, he/she enters the telephone No. of the opposite party by fingering the ten-keys displayed on the control panel 14. Since the entered telephone No. of the opposite party is displayed on the display panel 11, the user acknowledges it. Lastly, the user depresses the transmission/reception key 12. Thus, the transmission to the opposite party of the entered telephone No. is started.” <i>Id.</i> at 10:3-22.</p>
<p>Claim 6 (j): “an integral electronic camera in the housing, the camera for visually framing a visual image to be captured;”</p>	<p>“FIG. 8 illustrates the telecamcorder in teleconferencing mode where the camera 102 is pointed in the same direction as the viewing side of the display 100....” McNelley patent (Ex. 1003) at 6:37-39.</p> <p>“In one mode, the operator holds the entire unit in front of him/her with the display 100, serving as the</p>

Claim 6 Limitation	Prior Art Teaching
	<p>viewfinder.” <i>Id.</i> at 10:16-18.</p> <p>“The display may be of any type, but thin lightweight displays, such as an active matrix LCD, are preferred.” <i>Id.</i> at 6:41-43.</p> <p>“The telecamcorder may be configured without the single-eye viewfinder 166 and then utilizes one display as both teleconferencing display and viewfinder.” <i>Id.</i> at 7:14-16.</p>
<p>Claim 6 (k): “a processor associated with the electronic camera for capturing and digitizing the framed image in a format for transmission over the cellular telephone network via the cellular telephone”</p>	<p><u>McNelly</u>:</p> <p>“The video camera electronics 404 provides the video camera 406 with proper supply voltages and control signals and processes the output of the camera 406 into a final video signal to be fed to the controller 400.” <i>Id.</i> at 21:13-16 (regarding Fig. 30.)</p> <p>“An enhanced digitally-based telecamcorder may include microprocessors for operational functions.” <i>Id.</i> at 20:54-55.</p> <p>“FIG. 30 represents a block diagram of a telecamcorder of the present invention.” <i>Id.</i> at 4:3-4.</p> <p>“Recent advances in compression technology promise full motion, real-time teleconferencing using a single phone line, cable or wireless broadcast. Such advanced digital compression formats use small ASIC chips for compression and decompression. These chips can readily be built into the telecamcorder.” <i>Id.</i> at 18:43-48.</p> <p>“Although most current camcorders use analog recording techniques, digital recording can be advantageously employed in the telecamcorder for both recording modes and for answering machine</p>

Claim 6 Limitation	Prior Art Teaching
	<p>function.” <i>Id.</i> at 12:36-39.</p> <p>“An enhanced digitally-based telecamcorder may include microprocessors for operational functions. The digital storage may be used as a computer peripheral with modem data transmission and reception of data other than audio and video.” <i>Id.</i> at 20:54-58.</p> <p><u>Umezawa:</u></p> <p>“In one aspect of performance of the present invention, there is provided a video telephone equipment, comprising signal processing means for permitting ... a visual communication... a display panel which displays a received picture for the visual communication; a camera which takes a picture to-be-transmitted for the visual communication...” Umezawa patent (Ex. 1004) at 1:61-2:8.</p> <p>“The handy type video telephone equipment 1 is furnished with a main circuit board 17 which includes a processor and a memory....” <i>Id.</i> at 5:55-56.</p>
<p>Claim 6 (l): “a memory associated with the processor for receiving and storing the digitized framed image”</p>	<p>“Although most current camcorders use analog recording techniques, digital recording can be advantageously employed in the telecamcorder for both recording modes and for answering machine function.” McNelley patent (Ex. 1003) at 12:36-39.</p> <p>“An enhanced digitally-based telecamcorder may include microprocessors for operational functions. The digital storage may be used as a computer peripheral with modem data transmission and reception of data other than audio and video.” <i>Id.</i> at 20:54-58.</p>
<p>Claim 6 (m): “accessible for selectively displaying in the display window and accessible for selectively</p>	<p><u>McNelley:</u></p> <p>“Although most current camcorders use analog recording techniques, digital recording can be advantageously employed in the telecamcorder for</p>

Claim 6 Limitation	Prior Art Teaching
<p>transmitting over the cellular telephone network the digitized framed_image”</p>	<p>both recording modes and for answering machine function.” <i>Id.</i> at 12:36-39.</p> <p>“An enhanced digitally-based telecamcorder may include microprocessors for operational functions. The digital storage may be used as a computer peripheral with modem data transmission and reception of data other than audio and video.” <i>Id.</i> at 20:54-58.</p> <p>“In the near future, video-phone networks will use one or a combination of phone lines, television cables and wireless networks (i.e., cellular phone systems). The telecamcorder is applicable to any type of network.” <i>Id.</i> at 14:16-18.</p> <p>“If the telecamcorder is being used to make a recording, the controller 400 conditions the audio and video signals, if necessary, and ... the recording electronics 420 processes the signals for storage in memory 422.” <i>Id.</i> at 21:19-23.</p> <p>“When the units owner returns later, the messages can be played back through the speaker and display 416.” <i>Id.</i> at 22:1-3.</p> <p>“The information is recorded in memory A 424.... The logic 428 orders the recording electronics 420 to play the outgoing message [which was stored in memory] which is sent out [over] connection 104 to a remote terminal.” <i>Id.</i> at 21:48-67.</p> <p>“[T]he controller 400 routes the signal to a network access or communication electronics package 402.” <i>Id.</i> at 21:31-33.</p> <p>“With a wireless network the telecamcorder can serve as a portable wireless teleconferencing terminal much like a portable cellular phone.” <i>Id.</i> at 14:28-31.</p>

Claim 6 Limitation	Prior Art Teaching
	<p data-bbox="630 289 1448 449">“Size may be reduced by replacing the greeting tape deck with a solid state device capable of recording and playing back relatively short greeting whose signal contains both audio and images.” <i>Id.</i> at 12:26-29.</p> <p data-bbox="630 506 1455 625">“Multiple greetings may be accessed through a menu system with multiple message “boxes” designated for receiving incoming messages” <i>Id.</i> at 13:49-52.</p> <p data-bbox="630 682 1455 1052">“In teleconferencing mode, the recorder may record the outgoing signal or the incoming signal from the distant conferee. Also, the recorder may record or play back a separate signal while the audio and video-phone is in use. Both incoming and outgoing signals may be recorded simultaneously by mixing audio signals and screen splitting or having a picture in a picture, so that the recorded signal will contain both images.” <i>Id.</i> at 11:23-28.</p> <p data-bbox="630 1108 1455 1436">“The telecamcorder may be configured without the single-eye viewfinder 166 and then utilizes one display 100 as both teleconferencing display and viewfinder.... If the viewfinder, as well as the display screen, is provided by an electronic display, either the display screen or the viewfinder may be configured for use in both the camcorder mode and the teleconferencing mode.” <i>Id.</i> at 7:14-23.</p> <p data-bbox="630 1493 792 1528"><u>Umezawa:</u></p> <p data-bbox="630 1585 1455 1860">“In one aspect of performance of the present invention, there is provided a video telephone equipment, comprising signal processing means for permitting ... a visual communication; a display panel which displays a received picture for the visual communication; a camera which takes a picture to-be-transmitted for the visual communication; a control</p>

Claim 6 Limitation	Prior Art Teaching
	<p>panel through which a user of the video telephone equipment gives an operation command to the signal processing means....” Umezawa patent (Ex. 1004) at 1:61-2:5.</p> <p>“The handy type video telephone equipment 1 is furnished with a main circuit board 17 which includes a processor and a memory....” <i>Id.</i> at 5:55-56.</p> <p>“As best shown in FIG. 1, the function keys 15 consist of a button 15a for changing-over the visual telephone function and vocal telephone function of the equipment 1, a button 15b for changing-over the picture frames of the control panel 14, and buttons 15c, 15d for scrolling the picture frame of the control panel 14.” <i>Id.</i> at 8:30-35.</p>
<p>Claim 6 (n): “a user interface for enabling a user to selectively display the digitized framed image in the display window and subsequently transmit the digitized framed image over the cellular telephone_network;”</p>	<p><u>Umezawa:</u></p> <p>“In a case where the user operates the equipment 1 as a video telephone set, he/she grasps the grip 35 in his/her left hand and manipulates the pertinent components with his/her right hand.... Besides, he/she turns the camera 3 to the position of a desired angle (refer to FIG. 7). Subsequently, he/she depresses the transmission/reception key 12 to bring the display panel 11 and the control panel 14 into the ON states thereof. Further, he/she selects the visual telephone function by manipulating the function change-over button 15a. Thereafter, he/she enters the telephone No. of the opposite party by fingering the ten-keys displayed on the control panel 14. Since the entered telephone No. of the opposite party is displayed on the display panel 11, the user acknowledges it. Lastly, the user depresses the transmission/reception key 12. Thus, the transmission to the opposite party of the entered telephone No. is started.” Umezawa patent (Ex. 1004) at 10:3-22.</p>

Claim 6 Limitation	Prior Art Teaching
	“Therefore, the user can perform, not only a visual communication which is based on the photographing of his/her face, but also a visual communication during which the third party or a scene is being photographed.” <i>Id.</i> at 10:35-39.
Claim 6 (o): “and an integrated power supply for powering both the cellular telephone and the camera.”	“[T]he telecamcorder is designed to run on low voltage provided by batteries. ... The telecamcorder may be powered either by the battery or by an electrical outlet....” McNelley patent (Ex. 1003) at 18:49-51, 18:55-57.

7. Dependent Claim 7 “wherein the display window for viewing the alphanumeric signals is within the display window for framing the visual image”

121. It was explained above how McNelley and Umezawa teach a display window for viewing manually input alphanumeric signals (claim 6 (i)) and how the memory is accessible for selectively displaying in the display window the digitized framed image (claim 6 (m)). What claim 7 recites is that the display window for viewing the alphanumeric signals is within the display window for framing the visual image, and this would have been obvious to a person of ordinary skill in the art because it represents one of only two predictable options for such placement: 1) either display window for viewing the alphanumeric signals is within the display window for framing the visual image (as claimed), or 2) the display window for viewing the alphanumeric signals is outside the display window for framing the visual image. Either choice would have been easily implemented by a person of ordinary skill in the art, either choice would have a reasonable expectation of

success, and either choice would have provided user-friendly functionality. With only two such possibilities, both of which are desirable and easily implemented, both choices would have been obvious to a person of ordinary skill in the art at the time the '871 patent was filed.

122. As discussed with regard to the limitation in claim 6(i), Umezawa explicitly discloses an alphanumeric input (the keys displayed on the display panel 11) displayed on LCD upon which a dialed telephone number appears. A person of ordinary skill in the art would have understood this display to also be the display on which visual images are presented. *See, e.g.*, Umezawa (Ex. 1004) at 10:32-43. One predictable and desirable choice to a person of ordinary skill in the art would have been to place the alphanumeric display window with the visual image window. A person of ordinary skill in the art would have found it obvious to combine the disclosures of McNelley and Umezawa for reasons explained previously herein, and the combination of references yields the subject matter of claim 7, rendering it obvious.

8. Dependent Claim 8 “further including a second memory selectively removable from the housing”

123. McNelley discloses that a “removable recording medium 209 is placed into the telecamcorder through a door 212 which is released by a latch 214 and then closed for recording” *Id.* at 8:38-41. McNelley also teaches that “[a] holographic storage device is manufactured by Tamarack Storage Devices and this

or similar technology promises to be the most advantageous of all the digital storage mediums because of the low power consumption, removability, small physical size, large storage capacity and data access speeds similar to that of a conventional hard drive.” *Id.* at 12:54-60. This removable digital storage medium conventionally would have been understood by a person of ordinary skill in the art to be capable of, and used for, storing digital images data apart from any other memory used in McNelley’s telecamcorder. Thus, McNelley discloses the subject matter of the recited claim limitation to a person of ordinary skill in the art.

9. Independent Claim 12

- a. Claim 12 preamble: “A combination of a handheld wireless telephone and digital camera comprising:”

124. The McNelley patent’s device is a handheld wireless telephone digital camera. As it discloses, “the operator holds the entire unit in front of him/her with the display 100 serving as the viewfinder.” Ex. 1003, McNelley at 10:16-18.

Thus, the McNelley device is disclosed as being handheld.

125. The McNelley device combines a wireless telephone and digital camera, as it describes: “Fig. 8 shows a telecamcorder configured for use as a self-contained teleconferencing terminal as well as a camcorder.” *Id.* at 6:35-37. In the disclosed embodiment, “the camera 102 is pointed in the same direction nas the viewing side of the display.” *Id.* at 6:37-39. McNelley also discloses that its device operates over many networks, including telephone networks: “In the near

future, video-phone networks will use one or a combination of phone lines, television cables and wireless networks (i.e., cellular phone systems). The telecamcorder is applicable to any type of network.” *Id.* at 14:16-18.

- b. Claim 12:“a handheld housing which supports both the wireless telephone and the digital camera, the wireless telephone and electronic camera being commonly moveable with the housing”

126. McNelley’s device includes a handheld housing which supports both the wireless telephone and the digital camera, which are commonly moveable with the housing. The McNelley device is illustrated in Figure 8. Exhibit 1003, McNelley at Fig. 8. The operator holds the McNelley device in his hand during operation, using the display 100 as a viewfinder. *See, e.g., id.* at 10:16-18. The housing for the device includes “an integral vide-phone capable of receiving and sending teleconferencing signals and includes a built in display to view an incoming teleconferencing signal and a video pickup device that can produce an image of the operator for transmissions during teleconferencing.” *Id.* at 5:1-7.

Thus, McNelley discloses the claimed handheld housing.

- c. Claim 12:“a display supported in the housing for framing an image to be captured and for viewing the image, whereby an operator can view and frame the image prior to capture”

127. The McNelley device’s housing further includes a display for framing and viewing an image to be captured prior to the capture of the image. As McNelley describes, “[t]he telecamcorder may be configured without the single-

eye viewfinder 166 and then utilizes one display 100 as both teleconferencing display and viewfinder.” *Id.* at 7:14-16. It is further disclosed that a preferred display would include an LCD. *Id.* at 6:41-43.

- d. Claim 12:“a processor for processing the image framed by the camera for generating a digitized framed image as displayed in the display”

128. The McNelley patent’s device includes a processor for processing the image framed by the camera and for generating a digitized framed image for display in the display. McNelley discloses that advanced digital compression can be implemented using ASIC chips. *Id.* at 18:43-48. It also discloses the use of microprocessors for operational functions. *Id.* at 20:54-58. McNelley also discloses that image capture and recording can be digitized. *See id.* at 12:36-39 (“Although most current camcorders use analog recording techniques, digital recording can be advantageously employed in the telecamcorder for both recording modes and for answering machine function.”); *id.* at 13:5-9 (“To this end, digital video cameras employ circuit boards that include a charge coupled device (CCD) optical pickup. As electrical values are read from the CCD, the values are immediately converted into digital values and remain digital through all subsequent processing.”). These digitized images are viewed on the display, which can acts as a viewfinder. *See id.* at 6:41-43, 7:14-16. Accordingly, McNelley discloses the claimed processor.

- e. Claim 12: “a memory associated with the processor for receiving and storing the digitized framed image, for selectively displaying in the display window and for selectively transmitting over a wireless telephone network the digitized framed image;”

129. The McNelley patent’s device includes recording electronics 420, which processes signals for storage in memory 422, which can comprise any type of data recording medium ranging from tape and disks to solid state microelectronic memory. Ex. 1003, McNelley at 21:19-26. Image capture, recording, and storage can be digitized. *See id.* at 12:36-39, 13:5-9, 20:54-58. These stored signals include video image signals, and the stored signals can be played back through the speaker and display or sent out over connection 104 to a remote terminal or network including a wireless network allowing it to operate like a portable cellular phone. *See id.* at 21:48-67, 22:1-3, 14:28-31. Thus, the memory in the McNelley device is used for receiving and storing digitized framed images that can be selectively displayed in the display window or transmitted over a wireless telephone network.

- f. Claim 12: “the wireless telephone being selectively operable to accept and digitize audio signals to be transmitted, the wireless telephone being selectively operable to convert received digitized audio signals into acoustic audio, the wireless telephone being selectively operable to transmit and receive non-audio digital signals, the non-audio digital signals including a selected digitized frame image;”

130. The wireless telephone in the McNelley patent’s device is selectively operable to accept and digitize audio signals that can be transmitted, convert the

received digitized audio signals into acoustic audio, and transmit and receive non-audio digital signals, which include a selected digitized frame image. McNelley discloses that its device can be used a wireless teleconferencing terminal “much like a portable telephone. *Id.* at 14:16-18, 14:28-31. McNelley discloses that digital recording can be used, that its disclosed telecamcorder can be digitally-based with digital processing, and that it can utilize digital storing of signals for transmission. *Id.* at 12:36-39, 20:54-58. Moreover, as McNelley describes: “A camcorder (telecamcorder) of the present invention contains an integral videophone capable of receiving and sending teleconferencing signals and includes a built in display to view an incoming teleconferencing signal and a video pickup device that can produce an image of the operator for transmissions during teleconferencing.” *Id.* at 5:1-7. McNelley’s abstract further explains that the device communicates over a network to transmit video and audio signals from the device as well as reproduce audio signals that arrive over the network. *See id.* at Abstract. With respect to incoming audio signals, the McNelley patent discloses that “[t]he speaker 112 is provided for reproducing an audio signal from the distant conferee while in teleconferencing mode or for reproducing audio during playback of recorded material. In teleconferencing mode the speaker 112 and the microphone 114 serve as a speaker phone.” *Id.* at 7:27-32. The device further provides telecamcorder controls 188 and dialing controls 186, which permit

operation between camcorder mode and teleconferencing mode. *Id.* at Figs. 8-9, 8:10-15, 7:14-23.

131. As these example discloses demonstrate, McNelley's device allows for the selection of teleconferencing or camcorder mode, a teleconferencing mode which involves the acceptance and digitizing of audio signals, a selective ability to play back digitized audio signals as acoustic audio played through speakers, and a selective ability to transmit and receive non-audio images such as video images. McNelley therefore discloses the claimed selective operations to one of ordinary skill in the art.

- g. Claim 12: "a set of input keys supported by the housing to permit alphanumeric signals to be manually input by an operator into the wireless telephone, the alphanumeric signals being presented in the display for viewing by the operator;"

132. The McNelley device includes a set of input keys in the housing which permit alphanumeric signals to be manually input by an operator. As illustrated in Figure 9, "the dialing controls 186 and the telecamcorder controls 188 [are] built into the main housing 148. Built-in controls may serve in lieu of controls on the handset 174." *Id.* at Fig. 9, 8:10-15. One of ordinary skill in the art would have understood these controls to allow for the alphanumeric signals to be manually input into the McNelley device by an operator.

133. Although McNelley does not expressly disclose that the alphanumeric signals would be presented in the display for viewing by the operator, it was

conventional in the art to have control inputs displayed on a display (such as an LCD), particularly if such a display is already present on the device and is capable of displaying such signals. One of ordinary skill in the art would have understood the McNelley device's display to be capable of displaying alphanumeric signals. *See, e.g., id.* at 22:1-3. Thus, it would have been obvious to one of ordinary skill in the art for the input from controls 188 to be displayed on the provided display.

134. To the extent this limitation is not fully disclosed and rendered obvious by the disclosure in McNelley combined with the understanding of one ordinarily skilled in the art, it is disclosed by Umezawa. The Umezawa patent discloses entering telephone numbers on a user interface for its video telephone, whereby the entered numbers are displayed on display control panel 14. Ex. 1004, Umezawa patent, at 10:3-22. Thus, Umezawa expressly discloses the use of an LCD keypad in which the alphanumeric numbers that are input via the keypad are displayed on a display. As a result, the combination of Umezawa's user interface with the McNelley device discloses and renders obvious this limitation of the asserted claim.

135. Moreover, one of ordinary skill would have been motivated to combine Umezawa's user input with the McNelley device. As described above, Umezawa's user interface functionality allows for size reduction and more convenient hand-held operation, problems that McNelley was interested in solving.

Accordingly, it would have been obvious to one of ordinary skill in the art to combine McNelley with Umezawa to achieve the claimed features.

h. Claim 12: “a power supply supported by the housing;”

136. The McNelley device includes a power supply supported by the housing. As it describes, “the telecamcorder is designed to run on low voltage provided by batteries. . . . The telecamcorder may be powered either by the battery or by an electrical outlet.” Ex. 1003, McNelley at 18:49-57. The hand-grip 160 of the McNelley device serves as a battery housing. *Id.* at 6:61-62. Thus, McNelley discloses the claimed power supply.

i. Claim 12: “the wireless telephone including a wireless transmitter/receiver for transmitting digital signals sent from and receiving digital signals sent to the wireless telephone; and;”

137. The McNelley device includes a wireless transmitter/receiver for transmitting digital signals sent from and receiving digital signals sent to the device. As McNelley describes, the disclosed video-phone device is capable of receiving and sending teleconferencing signals. *Id.* at 5:1-7. “In the near future, video-phone networks will use one or a combination of phone lines, television cables and wireless networks (i.e., cellular phone systems). The telecamcorder is applicable to any type of network.... With a wireless network the telecamcorder can serve as a portable wireless teleconferencing terminal much like a portable

cellular phone.” *Id.* at 14:16-18, 14:28-31. As a result, McNelley discloses the claimed wireless transmitter/receiver.

- j. Claim 12: “at least one camera control circuit connected to an input device for controlling at least one of the following functions: gain, pedestal, setup, white clip, lens focus, white balance, lens iris, lens zoom.”

138. The McNelley device discloses at least one camera control circuit connected to an input device for controlling either gain, pedestal, setup, white clip, lens focus, white balance, lens iris, or lens zoom functions. For example, as illustrated in Figure 8, the hand-grip 160 also contains controls 164 for various features such as camera zoom and record/play back functions. *Id.* at 6:61-64. The McNelley telecamcorder also includes telecamcorder controls 188 built into the main housing 148. *Id.* at 8:10-15. “Features such as zoom and auto focus and numerous other special features common to camcorders may also be advantageously applied to teleconferencing.” *Id.* at 5:64-67. Accordingly, McNelley discloses the claimed at least one camera control circuit.

139. As discussed, McNelley combined with either the common understanding of one ordinarily skilled in the art or combined with Umezawa discloses each limitation of asserted claim 12. The following claim chart provides further detail on how the disclosures in the McNelley and Umezawa references disclose each limitation:

Claim 12 Limitation	Prior Art Teaching
----------------------------	---------------------------

Claim 12 Limitation	Prior Art Teaching
<p>Claim 12 preamble (a): “A combination of a handheld wireless telephone digital camera comprising:”</p>	<p>“Fig. 8 shows a telecamcorder configured for use as a self-contained teleconferencing terminal as well as a camcorder.” McNelley patent (Ex. 1003) at 6:35-37.</p> <p>“In one mode, the operator holds the entire unit in front of him/her with the display 100, serving as the viewfinder.” <i>Id.</i> at 10:16-18.</p> <p>“FIG. 8 illustrates the telecamcorder in teleconferencing mode where the camera 102 is pointed in the same direction as the viewing side of the display 100....” <i>Id.</i> at 6:37-39.</p> <p>“FIG. 9 shows a left side view of the telecamcorder illustrated in FIG. 8. This figure shows the dialing controls 186 and the telecamcorder controls 188 built into the main housing 148. Built-in controls may serve in lieu of controls on the handset 174, or both sets of controls may be employed on a single telecamcorder.” <i>Id.</i> at 8:10-15.</p> <p>“In the near future, video-phone networks will use one or a combination of phone lines, television cables and wireless networks (i.e., cellular phone systems). The telecamcorder is applicable to any type of network.” <i>Id.</i> at 14:16-18.</p>
<p>Claim 12(b): “a handheld housing which supports both the wireless telephone and the digital camera, the wireless telephone and electronic camera being commonly moveable with the housing;”</p>	<p>“Fig. 8 shows a telecamcorder configured for use as a self-contained teleconferencing terminal as well as a camcorder.” <i>Id.</i> at 6:35-37.</p> <p>“In one mode, the operator holds the entire unit in front of him/her with the display 100, serving as the viewfinder.” <i>Id.</i> at 10:16-18.</p> <p>“A camcorder (telecamcorder) of the present invention contains an integral video-phone capable of receiving and sending teleconferencing signals and includes a built in display to view an incoming teleconferencing signal and a video pickup device that can produce an</p>

Claim 12 Limitation	Prior Art Teaching
	image of the operator for transmissions during teleconferencing.” <i>Id.</i> at 5:1-7.
Claim 12(c):” a display supported in the housing for framing an image to be captured and for viewing the image, whereby an operator can view and frame the image prior to capture;”	<p>“The display may be of any type, but thin lightweight displays, such as an active matrix LCD, are preferred.” <i>Id.</i> at 6:41-43.</p> <p>“The telecamcorder may be configured without the single-eye viewfinder 166 and then utilizes one display 100 as both teleconferencing display and viewfinder.” <i>Id.</i> at 7:14-16.</p>
Claim 12(d): “a processor for processing the image framed by the camera for generating a digitized framed image as displayed in the display;”	<p><u>McNelley</u>:</p> <p>“The video camera electronics 404 provides the video camera 406 with proper supply voltages and control signals and processes the output of the camera 406 into a final video signal to be fed to the controller 400.” <i>Id.</i> at 21:13-16 (regarding Fig. 30.)</p> <p>“FIG. 30 represents a block diagram of a telecamcorder of the present invention.” <i>Id.</i> at 4:3-4.</p> <p>“Recent advances in compression technology promise full motion, real-time teleconferencing using a single phone line, cable or wireless broadcast. Such advanced digital compression formats use small ASIC chips for compression and decompression. These chips can readily be built into the telecamcorder.” <i>Id.</i> at 18:43-48.</p> <p>“Although most current camcorders use analog recording techniques, digital recording can be advantageously employed in the telecamcorder for both recording modes and for answering machine function.” <i>Id.</i> at 12:36-39.</p> <p>“An enhanced digitally-based telecamcorder may include microprocessors for operational functions. The digital storage may be used as a computer peripheral with modem data transmission and reception of data</p>

Claim 12 Limitation	Prior Art Teaching
	<p>other than audio and video.” <i>Id.</i> at 20:54-58.</p> <p>“To this end, digital video cameras employ circuit boards that include a charge coupled device (CCD) optical pickup. As electrical values are read from the CCD, the values are immediately converted into digital values and remain digital through all subsequent processing.” <i>Id.</i> at 13:5-9.</p> <p>“The display may be of any type, but thin lightweight displays, such as an active matrix LCD, are preferred.” <i>Id.</i> at 6:41-43.</p> <p>“The telecamcorder may be configured without the single-eye viewfinder 166 and then utilizes one display 100 as both teleconferencing display and viewfinder.” <i>Id.</i> at 7:14-16.</p> <p><u>Umezawa:</u></p> <p>“In one aspect of performance of the present invention, there is provided a video telephone equipment, comprising signal processing means for permitting ...a visual communication...a display panel which displays a received picture for the visual communication; a camera which takes a picture to-be-transmitted for the visual communication...” Umezawa patent (Ex. 1004) at 1:61-2:8.</p> <p>“The handy type video telephone equipment 1 is furnished with a main circuit board 17 which includes a processor and a memory...” <i>Id.</i> at 5:55-56.</p>
<p>Claim12(e): “a memory associated with the processor for receiving and storing the digitized framed image, for selectively displaying in the display window and for</p>	<p><u>McNelley:</u></p> <p>“Although most current camcorders use analog recording techniques, digital recording can be advantageously employed in the telecamcorder for both recording modes and for answering machine function.” McNelley patent (Ex. 1003) at 12:36-39.</p>

Claim 12 Limitation	Prior Art Teaching
<p>selectively transmitting over a wireless telephone network the digitized framed image;”</p>	<p>“An enhanced digitally-based telecamcorder may include microprocessors for operational functions. The digital storage may be used as a computer peripheral with modem data transmission and reception of data other than audio and video.” <i>Id.</i> at 20:54-58.</p> <p>“If the telecamcorder is being used to make a recording, the controller 400 conditions the audio and video signals, if necessary, and ... the recording electronics 420 processes the signals for storage in memory 422. The memory 422 actually comprises any type of data recording medium ranging from tape and disks to solid state microelectronic memory.” <i>Id.</i> at 21:19-26.</p> <p>“When the units owner returns later, the messages can be played back through the speaker and display 416.” <i>Id.</i> at 22:1-3.</p> <p>“The information is recorded in memory A 424.... The logic 428 orders the recording electronics 420 to play the outgoing message [which was stored in memory] which is sent out [over] connection 104 to a remote terminal.” <i>Id.</i> at 21:48-67.</p> <p>“With a wireless network the telecamcorder can serve as a portable wireless teleconferencing terminal much like a portable cellular phone.” <i>Id.</i> at 14:28-31.</p> <p>“Size may be reduced by replacing the greeting tape deck with a solid state device capable of recording and playing back relatively short greeting whose signal contains both audio and images.” <i>Id.</i> at 12:26-29.</p> <p>“Multiple greetings may be accessed through a menu system with multiple message “boxes” designated for receiving incoming messages” <i>Id.</i> at 13:49-52.</p> <p>“In the near future, video-phone networks will use one or a combination of phone lines, television cables and</p>

Claim 12 Limitation	Prior Art Teaching
	<p>wireless networks (i.e., cellular phone systems). The telecamcorder is applicable to any type of network.” <i>Id.</i> at 14:16-18.</p> <p>“The telecamcorder may be configured without the single-eye viewfinder 166 and then utilizes one display 100 as both teleconferencing display and viewfinder.... If the viewfinder, as well as the display screen, is provided by an electronic display, either the display screen or the viewfinder may be configured for use in both the camcorder mode and the teleconferencing mode.” <i>Id.</i> at 7:14-23.</p> <p><u>Umezawa:</u></p> <p>“In one aspect of performance of the present invention, there is provided a video telephone equipment, comprising signal processing means for permitting ... a visual communication; a display panel which displays a received picture for the visual communication; a camera which takes a picture to-be-transmitted for the visual communication; a control panel through which a user of the video telephone equipment gives an operation command to the signal processing means....” Umezawa patent (Ex. 1004) at 1:61-2:5.</p> <p>“The handy type video telephone equipment 1 is furnished with a main circuit board 17 which includes a processor and a memory....” <i>Id.</i> at 5:55-56.</p> <p>“In a case where the user operates the equipment 1 as a video telephone set, he/she grasps the grip 35 in his/her left hand and manipulates the pertinent components with his/her right hand.... Besides, he/she turns the camera 3 to the position of a desired angle (refer to FIG. 7). Subsequently, he/she depresses the transmission/reception key 12 to bring the display panel 11 and the control panel 14 into the ON states thereof. Further, he/she selects the visual telephone function by manipulating the function change-over</p>

Claim 12 Limitation	Prior Art Teaching
	<p>button 15a. Thereafter, he/she enters the telephone No. of the opposite party by fingering the ten-keys displayed on the opposite party is displayed on the display panel 11, the user acknowledges it. Lastly, the user depresses the transmission/reception key 12. Thus, the transmission to the opposite party of the entered telephone No. is started.” <i>Id.</i> at 10:3-22.</p> <p>“Therefore, the user can perform, not only a visual communication which is based on the photographing of his/her face, but also a visual communication during which the third party or a scene is being photographed.” <i>Id.</i> at 10:35-39.</p>
<p>Claim 12(f): “the wireless telephone being selectively operable to accept and digitize audio signals to be transmitted, the wireless telephone being selectively operable to convert received digitized audio signals into acoustic audio, the wireless telephone being selectively operable to transmit and receive non-audio digital signals, the non-audio digital signals including a selected digitized framed image;”</p>	<p><u>McNelly:</u></p> <p>“In the near future, video-phone networks will use one or a combination of phone lines, television cables and wireless networks (i.e., cellular phone systems). The telecamcorder is applicable to any type of network.... With a wireless network the telecamcorder can serve as a portable wireless teleconferencing terminal much like a portable cellular phone.” <i>Id.</i> at 14:16-18, 14:28-31.</p> <p>“A camcorder (telecamcorder) of the present invention contains an integral video-phone capable of receiving and sending teleconferencing signals and includes a built in display to view an incoming teleconferencing signal and a video pickup device that can produce an image of the operator for transmissions during teleconferencing.” <i>Id.</i> at 5:1-7.</p> <p>“Although most current camcorders use analog recording techniques, digital recording can be advantageously employed in the telecamcorder for both recording modes and for answering machine function.” <i>Id.</i> at 12:36-39.</p> <p>“An enhanced digitally-based telecamcorder may include microprocessors for operational functions. The digital storage may be used as a computer peripheral</p>

Claim 12 Limitation	Prior Art Teaching
	<p>with modem data transmission and reception of data other than audio and video.” <i>Id.</i> at 20:54-58.</p> <p>“Fig. 9 shows a left side view of the telecamcorder illustrated in Fig. 8. This figure shows the dialing controls 186 and the telecamcorder controls 188 built into the main housing 148. Built-in controls may serve in lieu of controls on the handset 174.” <i>Id.</i> at 8:10-15.</p> <p>“The telecamcorder may be configured without the single-eye viewfinder 166 and then utilizes one display 100 as both teleconferencing display and viewfinder. . . . If the viewfinder, as well as the display screen, is 20 provided by an electronic display, either the display screen or the viewfinder may be configured for use in both the camcorder mode and the teleconferencing mode.” <i>Id.</i> at 7:14-23.</p> <p>“The speaker 112 is provided for reproducing an audio signal from the distant conferee while in teleconferencing mode or for reproducing audio during playback of recorded material. In teleconferencing mode the speaker 112 and the microphone 114 serve as a speaker phone.” <i>Id.</i> at 7:27-32.</p> <p><u>Umezawa:</u></p> <p>“The present invention relates to video telephone equipment, and more particularly to a video telephone equipment of so-called handy type which permits a user to transmit and receive pictures and speech with its casing held in one hand.” Umezawa patent (Ex. 1004) at 1:5-10.</p> <p>“The second object of the present invention is to provide a video telephone equipment which can assume both a vocal telephonic communication attitude corresponding to speech and a visual telephonic</p>

Claim 12 Limitation	Prior Art Teaching
	<p>communication attitude corresponding to both a picture and speech, with the casing thereof held in one hand by a user, and which ensures good transmission and reception in each of the attitudes.” <i>Id.</i> at 1:41-47.</p> <p>“In one aspect of performance of the present invention, there is provided a video telephone equipment, comprising signal processing means for permitting ... a visual communication; a display panel which displays a received picture for the visual communication; a camera which takes a picture to-be-transmitted for the visual communication; a control panel through which a user of the video telephone equipment gives an operation command to the signal processing means....” <i>Id.</i> at 1:61-2:5.</p> <p>“The handy type video telephone equipment 1 is furnished with a main circuit board 17 which includes a processor and a memory....” <i>Id.</i> at 5:55-56.</p>
<p>Claim 12(g): “a set of input keys supported by the housing to permit alphanumeric signals to be manually input by an operator into the wireless telephone, the alphanumeric signals being presented in the display for viewing by the operator;”</p>	<p><u>McNelley</u>:</p> <p>“Fig. 9 shows a left side view of the telecamcorder illustrated in Fig. 8. This figure shows the dialing controls 186 and the telecamcorder controls 188 built into the main housing 148. Built-in controls may serve in lieu of controls on the handset 174.” <i>McNelley</i> patent (Ex. 1003) at 8:10-15.</p> <p>“The display may be of any type, but thin lightweight displays, such as an active matrix LCD, are preferred.” <i>Id.</i> at 6:41-43.</p> <p><i>See also id.</i> at 7:58-59, 8:11-12 (disclosing dialing controls 186).</p> <p>“When the units owner returns later, the messages can be played back through the speaker and display 416.” <i>Id.</i> at 22:1-3.</p> <p>“The information is recorded in memory A 424.... The</p>

Claim 12 Limitation	Prior Art Teaching
	<p>logic 428 orders the recording electronics 420 to play the outgoing message [which was stored in memory] which is sent out [over] connection 104 to a remote terminal.” <i>Id.</i> at 21:48-67.</p> <p>“Multiple greetings may be accessed through a menu system with multiple message “boxes” designated for receiving incoming messages” <i>Id.</i> at 13:49-52. “In the near future, video-phone networks will use one or a combination of phone lines, television cables and wireless networks (i.e., cellular phone systems). The telecamcorder is applicable to any type of network.... With a wireless network the telecamcorder can serve as a portable wireless teleconferencing terminal much like a portable cellular phone.” <i>Id.</i> at 14:16-18, 14:28-31.</p> <p>“FIG. 9 shows a left side view of the telecamcorder illustrated in FIG. 8. This figure shows the dialing controls 186 and the telecamcorder controls 188 built into the main housing 148.” <i>Id.</i> at 8:10-13.</p> <p><u>Umezawa:</u></p> <p>“In a case where the user operates the equipment 1 as a video telephone set, he/she grasps the grip 35 in his/her left hand and manipulates the pertinent components with his/her right hand.... Besides, he/she turns the camera 3 to the position of a desired angle (refer to FIG. 7). Subsequently, he/she depresses the transmission/reception key 12 to bring the display panel 11 and the control panel 14 into the ON states thereof. Further, he/she selects the visual telephone function by manipulating the function change-over button 15a. Thereafter, he/she enters the telephone No. of the opposite party by fingering the ten-keys displayed on the control panel 14. Since the entered telephone No. of the opposite party is displayed on the display panel 11, the user acknowledges it. Lastly, the</p>

Claim 12 Limitation	Prior Art Teaching
	<p>user depresses the transmission/reception key 12. Thus, the transmission to the opposite party of the entered telephone No. is started.” Umezawa patent (Ex. 1004) at 10:3-22.</p> <p>“A camcorder (telecorder) of the present invention contains an integral video-phone capable of receiving and sending teleconferencing signals and includes a built in display to view an incoming teleconferencing signal and a video pickup device that can produce an image of the operator for transmissions during teleconferencing.” <i>Id.</i> at 5:1-7.</p>
<p>Claim 12(h): “a power supply supported by the housing;”</p>	<p>“[T]he telecamcorder is designed to run on low voltage provided by batteries. ... The telecamcorder may be powered either by the battery or by an electrical outlet....” McNelley (Ex. 1003) at 18: 49-51, 18:55-57.</p> <p>“The hand-grip 160 serves as a battery housing and also contains controls 164 for various features such as camera zoom and record/playback functions.” <i>Id.</i> at 6:61-64.</p>
<p>Claim 12(i): “the wireless telephone including a wireless transmitter/receiver for transmitting digital signals sent from and receiving digital signals sent to the wireless telephone; and”</p>	<p>“A camcorder (telecorder) of the present invention contains an integral video-phone capable of receiving and sending teleconferencing signals and includes a built in display to view an incoming teleconferencing signal and a video pickup device that can produce an image of the operator for transmissions during teleconferencing.” <i>Id.</i> at 5:1-7.</p> <p>“In the near future, video-phone networks will use one or a combination of phone lines, television cables and wireless networks (i.e., cellular phone systems). The telecamcorder is applicable to any type of network.... With a wireless network the telecamcorder can serve as a portable wireless teleconferencing terminal much like a portable cellular phone.” <i>Id.</i> at 14:16-18, 14:28-31.</p>

Claim 12 Limitation	Prior Art Teaching
<p>Claim 12(j): “at least one camera control circuit connected to an input device for controlling at least one of the following functions: gain, pedestal, setup, white clip, lens focus, white balance, lens iris, lens zoom.”</p>	<p>“The hand-grip 160 serves as a battery housing and also contains controls 164 for various features such as camera zoom and record/playback functions.” <i>Id.</i> at 6:61-64.</p> <p>“FIG. 9 shows a left side view of the telecamcorder illustrated in FIG. 8. This figure shows the dialing controls 186 and the telecamcorder controls 188 built into the main housing 148. Built-in controls may serve in lieu of controls on the handset 174, or both sets of controls may be employed on a single telecamcorder.” <i>Id.</i> at 8:10-15.</p> <p>“Features such as zoom and auto focus and numerous other special features common to camcorders may also be advantageously applied to teleconferencing.” <i>Id.</i> at 5:64-67.</p>

10. **Dependent Claim 13 “a removable memory module removably housed in the housing for storing captured images”**

140. The McNelley patent discloses a removable memory module housed in the housing for storing captured images. As the reference describes: “A removable recording medium 209 is placed into the telecamcorder through a door 212 which is released by a latch 214 and then closed for recording.” Ex. 1003, McNelley at 8:38-40. It also discloses: “A holographic storage device is manufactured by Tamarack Storage Devices and this or similar technology promises to be the most advantageous of all the digital storage mediums because of the low power consumption, removability small physical size, large storage capacity and data access speeds similar to that of a conventional hard drive.” *Id.* at

12:54-60. A person of ordinary skill in the art would have understood this removable storage medium to conventionally be capable of, and used for, storing digital image data apart from any other memory used by the system. Therefore, McNelley discloses the claimed removable memory module, rendering claim 13 as obvious over the McNelley device combined with either the common understanding of one ordinarily skilled in the art or with the Umezawa reference.

11. Dependent Claim 14 “the display also being operable for viewing images received by the receiver”

141. The McNelley patent discloses a display that allows for viewing images received by the receiver. The McNelley device’s display 100 can be used as both a teleconferencing display and viewfinder. *Id.* at 7:14-16. McNelley further discloses a “camcorder (telecamcorder) of the present invention contains an integral video-phone capable of receiving and sending teleconferencing signals.” *Id.* at 5:1-3. The McNelley patent also describes that “[t]he device is equipped with communication electronics that establish a connection over a network, and then transmits video and audio signals from the device while displaying video signals and reproducing audio signals that arrive over the network.” *Id.* at Abstract. Thus, McNelley discloses that the device’s display can be used to view images received by the receiver. Accordingly, claim 14 is obvious in view of the McNelley device combined with either the common understanding of one ordinarily skilled in the art or with the Umezawa reference.

VI. REVISION OR SUPPLEMENTATION

142. In this report, I have presented my opinions regarding the invalidity of the claims of the '871 Patent based on the information available to me. My opinions are subject to change in view of opinions provided by the patent owner or its expert, or any additional information that I may receive. I reserve the right to supplement my opinions accordingly.

Executed 9 June 2015, 2015 at Alamo, CA



Tim A. Williams, Ph.D.