

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

SAMSUNG ELECTRONICS AMERICA, INC.,
Petitioner,

v.

PRISUA ENGINEERING CORP.,
Patent Owner.

Case IPR2017-01188
Patent 8,650,591

**CORRECTED PRELIMINARY RESPONSE
BY PATENT OWNER**

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Other Authorities

Steven G. Calabresi & Larissa C. Leibowitz, *Monopolies and the Constitution: A History of Crony Capitalism*, 36 Harv. J.L. & Pub. Pol’y 983 (2013) 11

PATENT OWNER'S EXHIBIT LIST

- Ex. 2001 *Prisua Engineering Corp. v. Samsung Electronics Co., Ltd., et al.*, Case No. 1:16-cv-21761-KMM, Order Denying Motion to Dismiss (March 9, 2017)
- Ex. 2002 Declaration of Yolanda Prieto, Ph.D. Supporting Plaintiff's Opening Claim Construction
- Ex. 2003 Declaration of Shariar Negahdaripour, Ph.D. Supporting Patent Owner's Reply Claim Construction
- Ex. 2004 *Prisua Engineering Corp. v. Samsung Electronics Co., Ltd., et al.*, Case No. 1:16-cv-21761-KMM, Complaint for Patent Infringement (May 17, 2016)
- Ex. 2005 *Prisua Engineering Corp. v. Samsung Electronics Co., Ltd., et al.*, Case No. 1:16-cv-21761-KMM, Petitioner's Motion to Dismiss for Failure to State a Claim (August 15, 2016)
- Ex. 2006 Declaration of Yolanda Prieto, Ph.D. Supporting Plaintiff's Reply Claim Construction
- Ex. 2007 *Samsung Launches Premium Exynos 9 Series Processor Built on the World's First 10nm FinFET Process Technology*, Samsung Press Release, Feb. 23, 2017, <https://news.samsung.com/global/samsung-launches-premium-exynos-9-series-processor-built-on-the-worlds-first-10nm-finfet-process-technology>

Ex. 2008

Definition of “Substitute” -
Merriam-Webster Dictionary,
[https://www.merriam-
webster.com/dictionary/substitute](https://www.merriam-webster.com/dictionary/substitute)

Ex. 2009

Definition of “General Purpose Computer” -
[https://www.its.bldrdoc.gov/fs-1037/dir-
017/ 24523.htm](https://www.its.bldrdoc.gov/fs-1037/dir-017/_24523.htm)

Ex. 2010

Iain E.G. Richardson, H.264 and MPEG-4 Video
Compression 172, 226 (Wiley 2003).

Pursuant to 37 C.F.R. § 42.107, patent owner Prisia Engineering Corp. (“Patent Owner”) submits the following corrected preliminary response to the corrected petition for *inter partes* review (Paper No. 3 (the “Petition”)) filed by petitioner Samsung Electronics America, Inc. (“Petitioner”).

CERTIFICATION OF WORD COUNT UNDER 37 C.F.R. § 42.24

Patent Owner certifies that the word count in this preliminary response is 13,978 words, as counted by the word-processing program (Microsoft Word Version 15.33) used to generate this preliminary response, where such word count excludes the table of contents, table of authorities, mandatory notices, certificate of service, appendix of exhibits, and this certificate of word count. This preliminary response is in compliance with the 14,000 word limit set forth in 37 C.F.R. § 42.24(b)(1).

I. INTRODUCTION

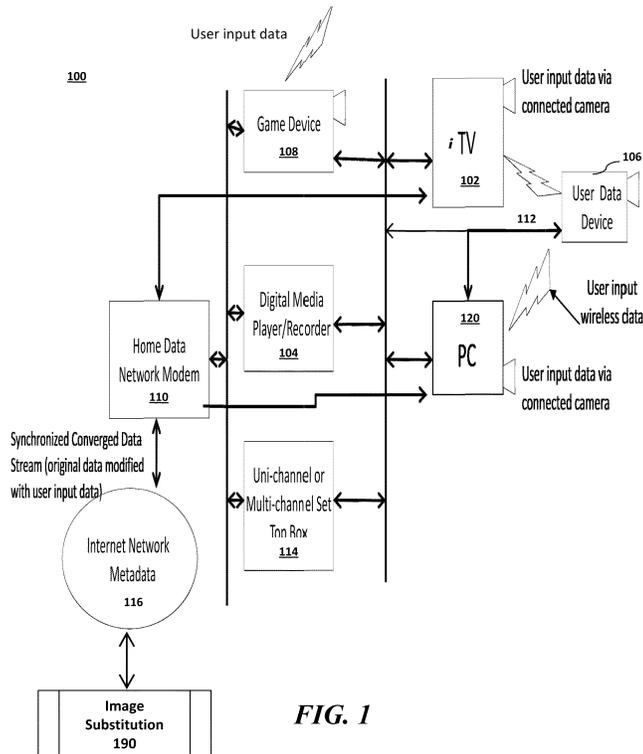
The Board should not institute *inter partes* review on claims 1-4, 8 or 11 of U.S. Patent No. 8,650,591 (the “’591 patent”) because Petitioner has not met its burden of showing a reasonable likelihood of prevailing on any of its proposed grounds of unpatentability.

A. Overview of the ’591 Patent

The ’591 patent is an invention in the field of digital image signal processing developed by an industry-recognized researcher and inventor. *See generally* Order Denying Mot. to Dismiss (Ex. at 2001); Declaration of Yolanda Prieto (Ex. 2002). Dr. Prieto, the ’591 patent’s sole inventor, holds a Ph.D. in image

and video signal processing from the University of Miami and has over 27 years of experience in digital signal processing, system-on-chip architectures, and integrated circuit design, including duties as senior scientist for some of Petitioner's biggest competitors, including Motorola. (Ex. 2002 at 1-2.)

Petitioner's reproduction of Figure 3 is an attempt to oversimplify the invention. The '591 patent describes Figure 3 as "a *simplified* illustration of a video image substitution on a gaming device." (Ex. 1001 at Figure 3.) (emphasis added). Figure 1, reprinted below provides additional information regarding the '591 patent.



Petitioner mischaracterizes the ‘591 patent as being directed to a “*system*” that substitutes a “*portion of a ... video*” with “an *image* from a video...” (Paper 3 at 5) (emphasis added). It is not. Claims 1, 3, 4 and 8 of the ‘591 patent are directed to an apparatus. (Ex. 1001 at 7:14 – 8:19.) Claim 11 is directed to a method.

The apparatus of claim 1 has a number of video data streams. (*Id.* at 7:14-20.) One data stream is referred to as the “original” and another is the “user input.” *Id.* A digital processing unit extracts a portion of the original and user input data streams, thereby constituting a first and second image. (*Id.* at 7:35-54.)

The areas in the extracted first and second images are spatially matched by the digital processing unit. (*Id.* at 2:44-46, 3:28, 7:46-54.) The digital processing unit then substitutes the spatially matched first image with the spatially matched second image (*id.* at 7:46- 54), and the apparatus outputs a “converged data stream” (*id.* at 2:16-24, 3:5-27, 7:46-54, Figure 2).

B. Prosecution History

The ‘591 patent is based on Provisional Application No. 61/311,892 filed March 9, 2010. (Ex. 1001 at 1.) The prosecution of the ‘591 patent lasted almost three years – beginning with the filing date of the non-provisional application on March 8, 2011 and concluding with the grant date of February 11, 2014. *Id.*

As Petitioner’s recitation of the prosecution history illustrates, Patent

Owner submitted a number of claim amendments in response to the Examiner's actions. (Paper 3 at 6-9). Ultimately, in view of Patent Owner's amendments and arguments to overcome the single cited prior art reference, the claims of the '591 patent were issued.

C. The Challenged Claims

Petitioner challenges claims 1, 2-4, 8 and 11 of the '591 patent. Claim 1 is an apparatus claim. Claims 2-4 and 8 are dependent on claim 1. Claim 11 is a method claim. The various limitations of each claim are discussed below.

D. Concurrent Litigation Against Petitioner

In August 2014, Patent Owner notified Petitioner that various products sold by Petitioner infringe the '591 Patent. After Petitioner refused to negotiate a license, Patent Owner served Petitioner with a complaint for patent infringement on May 2016. *See generally* Ex. 2004.

Early in the litigation, Petitioner moved to dismiss Patent Owner's complaint for failure to state a claim, arguing that the '591 patent was a "textbook example" of a patent-ineligible concept under the Supreme Court's *Alice* framework. (Ex. 2005 at 6.) Petitioner maintained that the '591 patent merely recited abstract functional steps of "cutting-and-pasting" images onto one another. Patent Owner opposed Petitioner's motion to dismiss, arguing the '591 patent is a patent-eligible invention in the field of digital image signal

processing developed by an industry-recognized researcher and inventor. *Id.* The Court denied Petitioner’s motion to dismiss. (Ex. 2001.) The Court held “[Petitioner sought] to oversimplify the ‘591 patent in arguing that the “Best Face” invention uses a generic computer function to perform an action that could be performed by a human by cutting-and- pasting.” *Id.* The Court declined Petitioner’s suggestion “to equate the “Best Face” technology with “arts and craft classes” or making collages,” thereby rejecting Petitioner’s argument that the ‘591 patent was directed to an abstract idea. *Id.* The Court also found the ‘591 patent’s “spatial matching” was an “inventive concept” sufficient to satisfy the second prong of the *Alice* framework. *Id.*

Shortly after the Court denied Petitioner’s motion to dismiss, Petitioner filed the instant petition for *inter partes* review on March 29, 2017. (Paper 3 at 77.)

II. CLAIM CONSTRUCTION

For purposes of *inter partes* review, “[a] claim . . . shall be given its broadest reasonable construction in light of the specification of the patent in which it appears.” 37 C.F.R. § 42.100(b); *Cuozzo Speed Techs., LLC v. Lee*, 136 S. Ct. 2131 (2016). Because this standard is different from the claim construction standard used by federal courts in litigation, *see, e.g., In re Swanson*, 540 F.3d 1368, 1377-78 (Fed. Cir. 2008), any claim construction explicitly or implicitly

presented herein should not necessarily be viewed as Patent Owner's own construction, but as a construction that may be raised under the standard applicable in this proceeding. As such, in any litigation, where different claim construction standards may apply, Patent Owner reserves the right to present other interpretations that differ in whole or in part from those presented herein.

A. Petitioner's Proposed Claim Construction

Petitioner has proposed a construction for “digitally extracted,” “digital extraction,” and “extracting” – terms which appear in claims 1-4 and 11 of the '591 patent. Petitioner contends the broadest reasonable interpretation of “digitally extracted,” “digital extraction,” and “extracting” is “to digitally select and separate out, such as by copying.”

Patent Owner does not dispute this proposed construction. Indeed, Petitioner's position is in line with Patent Owner's proposed construction in the litigation. (Ex. 1005 at 16-17.)

B. Patent Owner's Proposed Claim Construction

Patent Owner asserts the terms “user input video data stream,” “original video data stream,” and “spatially matching” – all of which appear in claim 1 require construction. Patent Owner proposes the following constructions:

Claim Term	Patent Owner's Proposed Construction
user input video data stream	a sequence of images digitally recorded by a user separate from the original video data stream
original video data stream	a digitally recorded sequence of images that is to be modified
spatially matching	aligning a set of pixels in the spatial domain

Patent Owner's construction of "user input video data stream" is proper because it naturally aligns with the claim language. Claim 1 of the '591 patent recites the word "image" 17 separate times. (Ex. 1001 7:14-54). Claim 1 recites "receiving a selection of the ... image from the ... video data stream", and "extracting the ...image" from said video data stream (*Id.* at 7:43-45). A plain reading of this language indicates that the referenced "video data stream" is composed of multiple images. Claim 1 similarly recites an "image display device displaying the video data stream." (*Id.* at 7:23-24). Again here, it is evident that the display of a "video data stream" requires the display of images, leading to the conclusion that a "video data stream" is composed of images. Patent Owner's proposed construction is also supported by numerous passages in the specification that make clear the '591 patent is centered on image processing (as opposed to frame processing, as Petitioner would have it). *See, e.g., id.* at 2:46-58 ("...the digital device may further process the image to enhance it");

see also id. at 3:28-40 (“This process requires the input device to perform ... image analysis and processing”)

With respect to the term “spatially matching,” in the litigation Patent Owner has relied on the testimony of its expert to establish that “spatial matching” can be understood as “aligning a set of pixels in the spatial domain.” (Ex. 1009 at 14.)

Patent Owner further proposes the following construction for terms found in claims 3 and 4:

Claim Term	Patent Owner’s Proposed Construction
pixel from the user entering data in the data entry display device (‘591 patent, claim 3)	selecting and separating out the at least one pixel chosen by a user on a display, when said display is acting as a data entry device and receives a selection of at least one pixel by said user
at the digital processing unit is further capable of extracting the at least one pixel from the user pointing to a spatial location in a displayed video frame (‘591 patent, claim 4)	performing spatial analysis on a video frame based on a user input, then selecting and separating out the at least one pixel chosen by said user

The ‘591 patent’s specification discloses “user input data” that “can be captured directly” by a “stand alone device” that is equipped with “data entry devices such as a...displaying device.” (Ex. 1001 at 4:45-56). In other words, the specification is clear that a display device can serve as an input device, so as

to capture an input by a user. Indeed, at the time the specification was written, using display devices (*i.e.*, touchscreens) as a way to capture user input (*i.e.*, as input devices) was already generally well known to those of ordinary skill in the art. (Ex. 1009 at 15-16). And at the time of writing of the ‘591 patent, input devices such as touchscreens were capable of receiving a selection of at least one pixel by a user, and transmitting or translating the input received into a digital signal, to be sent to a digital processing unit. *Id.*

With respect to claim 4, the term “the user pointing to” is properly construed as “chosen by said user.” This construction naturally aligns with the patent’s description of the invention because the specification discloses “user input data” captured by a “data entry device” including a display device. (Ex. 1001 at 4:45-65).

Finally, “a spatial location in a displayed video frame” is properly construed as “performing spatial analysis on a video frame based on a user input.” *Id.*

III. UNCONSTITUTIONALITY OF *INTER PARTES* REVIEW

The U.S. Supreme Court has granted certiorari to decide the following question: “Whether *inter partes* review – an adversarial process used by the Patent and Trademark Office (PTO) to analyze the validity of existing patents – violates the Constitution by extinguishing private property rights through a

non-Article III forum without a jury.” Petition for a Writ of Certiorari, *Oil States Energy Servs., LLC v. Greene’s Energy Group, LLC*, No. 16-712 (U.S. Nov. 23, 2016); see Order, *Oil States Energy Servs., LLC v. Greene’s Energy Group, LLC*, No. 16-712 (U.S. June 12, 2017) (Mem) (granting petition for writ of certiorari as to first question presented). As the petitioner in *Oil States* argues, *inter partes* review conflicts with the Supreme Court’s cases upholding the constitutional guarantees of a jury and an Article III court for patent invalidation.

Supreme Court precedent establishes that the Seventh Amendment to the U.S. Constitution provides patent owners with a right to a jury in patent invalidation proceedings. The Seventh Amendment provides a right to a jury trial “[i]n Suits at common law.” U.S. Const. amend. VII. The Supreme Court has held the Seventh Amendment applicable to “actions brought to enforce statutory rights that are analogous to common-law causes of action ordinarily decided in English law courts in the late 18th century, as opposed to those customarily heard by courts of equity or admiralty.” *Granfinanciera, S.A. v. Nordberg*, 492 U.S. 33, 42 (1989).

Historically, actions for patent infringement and validity were decided in common-law courts in England. See *Markman v. Westview Instruments, Inc.*, 52 F.3d 967, 992-93 (Fed. Cir. 1995) (“An action for patent infringement is one that would have been heard in the law courts of old England.”); Steven G.

Calabresi & Larissa C. Leibowitz, *Monopolies and the Constitution: A History of Crony Capitalism*, 36 Harv. J.L. & Pub. Pol’y 983, 991-92 (2013) (explaining that parliamentary dissatisfaction with royal monopolies at the end of the sixteenth century led Queen Elizabeth to provide for “cases involving the legality of monopolies to be heard in common law courts,” leading to “the famous 1603 case of *Darcy v. Allen*,” in which the common-law court “ruled for Allen, finding that Darcy’s royal patent was void”); *see also Ex Parte Wood & Brundage*, 22 U.S. (9 Wheat.) 603, 615 (1824) (“[I]t is ORDERED . . . that the said Judge do award a process, in the nature of a *scire facias*, to the patentees, to show cause why the said patent should not be repealed . . . and that if the issue be an issue of fact, the trial thereof be by a jury.”).

A proceeding to invalidate a U.S. patent is therefore subject to the Seventh Amendment right to trial by jury. Patent Owner does not waive, and has not waived, the right to trial by jury. (*See Ex. 2004 at 10 (demanding trial by jury).*) *Inter partes* review violates Patent Owner’s Seventh Amendment right to trial by jury. Institution of *inter partes* review should therefore be denied.

Supreme Court precedent establishes that patent owners have a right to an Article III forum for patent invalidation proceedings.

The Supreme Court has interpreted Article III of the Constitution as meaning that Congress may not “withdraw from judicial cognizance any matter

which, from its nature, is the subject of a suit at the common law, or in equity, or admiralty.” *Stern v. Marshall*, 564 U.S. 462, 484 (2011) (quoting *Murray’s Lessee v. Hoboken Land & Improvement Co.*, 59 U.S. (1 How.) 272, 284 (1855)). The question is thus whether a case is “made of ‘the stuff of the traditional actions at common law tried by the courts at Westminster in 1789.’” *Id.* (quoting *N. Pipeline Constr. Co. v. Marathon Pipe Line Co.*, 458 U.S. 50, 90 (1982) (Rehnquist, J. concurring)). As explained above, cases involving patent infringement and validity are the stuff of traditional actions at common law.

Accordingly, the Supreme Court held in *McCormick Harvesting Machine Co. v. C. Aultman & Co.*, 169 U.S. 606 (1898), that “[t]he only authority competent to set a patent aside, or to annul it . . . is vested in the courts of the United States, and not in the department which issued the patent,” *id.* at 609. A patent “is not subject to be revoked or canceled by the president, or any other officer of the government.” *Id.* at 608. *See also United States v. Am. Bell Tel. Co.*, 128 U.S. 315, 365 (1888) (“Patents are sometimes issued unadvisedly or by mistake In such cases courts of law will pronounce them void. . . . That is a judicial act, and requires the judgment of a court.”) (internal quotation marks omitted).

Nor can the authority to determine patent validity be stripped from Article

III courts on a premise that the rights are public in nature rather than private. The Supreme Court in *McCormick* could not have been more clear. Once issued, a patent is “the property of the patentee, and as such is entitled to the same legal protection as other property.” *Id.* at 609; *accord Am. Bell Tel.*, 128 U.S. at 370 (“This is property This has been taken from the people, from the public, and made the private property of the patentee”).

Inter partes review violates Article III of the Constitution by placing the authority to determine patent validity in the executive-branch agency that issued the patent. Institution of *inter partes* review should be denied.

IV. PROPOSED GROUNDS OF CHALLENGE

Pursuant to 37 C.F.R § 42.107, Patent Owner submits the following explanation of reasons why *inter partes* review should not be instituted. In short, Petitioner has failed to carry its burden of establishing a reasonable likelihood of prevailing on any proposed ground of unpatentability. Institution of *inter partes* review should be denied.

A. Ground 1: Claims 1, 2, 8 and 11 Are Neither Anticipated by, Nor Obvious in View of, Senftner

Petitioner’s first ground of challenge proposes that claims 1, 2, 8 and 11 (and notably not claim 3 or 4) of the ‘591 patent are anticipated by, or obvious in view of, U.S. Patent No. 7,460,731 to Senftner (Ex. 1006 (hereinafter “Senftner”)). Senftner does not disclose all elements of the claimed inventions,

and Petitioner's attempt to manufacture absent elements out of thin air should be rejected.

1. The Claims Are Not Anticipated by Senftner

The determination of anticipation under 35 U.S.C. § 102 requires the identical disclosure, either explicitly or inherently, of each element of a claimed invention in a single reference. *In re Schreiber*, 128 F.3d 1473, 1477 (Fed. Cir. 1997) ("To anticipate a claim, a prior art reference must disclose every limitation of the claimed invention, either explicitly or inherently"), *In re Rijckaert*, 9 F.3d 1531 (Fed. Cir. 1993); *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236 (Fed. Cir. 1989); *Perkin-Elmer Corp. v. Computervision Corp.*, 732 F.2d 888, 894 (Fed. Cir. 1984). Moreover, the anticipating prior art reference must describe the recited invention with sufficient clarity and detail to establish that the claimed limitations existed in the prior art and that such existence would be recognized by one having ordinary skill in the art. *See In re Spada*, 911 F.2d 705, 708 (Fed. Cir. 1990); *Diversitech Corp. v. Century Steps Inc.*, 850 F.2d 675, 678 (Fed. Cir. 1988). Absence from an allegedly anticipating prior art reference of any claimed element negates anticipation. *Kloster Speedsteel AB v. Crucible, Inc.*, 793 F.2d 1565, 1571 (Fed. Cir. 1986).

i. Claims 1 and 11

a. [1a] an image capture device capturing the user input video stream

Petitioner argues that both a 2D digital image (replacement image) and an input video stream are captured by the same device – *i.e.*, the digital image recording device 420 shown in Figures. 8 and 9 of Senftner. Petitioner conspicuously fails to explain that Senftner teaches two different paths from which the data is obtained. One path for 2D digital image capture is device 420 in Figures. 8-9 (also shown as device 660 in Figures, 10-11). (*See* Ex. 1006 at 17:46-49) (“The 2D digital image 425 may be created by means of a digital image recording device 420, such as a digital camera, a digital video recorder, or a camera-equipped cell phone.”). Yet digital video 455 (as shown on Figures 8-9) is obtained from “suppliers of digital video” 450 – and *not* from device 420. (*Id.* Figs. 8-9; *Id.* at 17:36-40). Thus, Senftner does *not* disclose a video data stream obtained from the image capture device.

There are also two different processing paths, one for the digital video 455 and the second for the 2D digital image 425, are also clearly shown in Figures 1 and 4-11. Not only these two paths are different, they are also independent of each other. (*Id.* at 9:32-35.)

This is significantly different from claims 1 and 11 of the ‘591 patent, where the replacement image is obtained from a video data stream. (Ex. 1001 at

7:27-28; *id.* at 8:47-52). Thus, Senftner does not disclose this limitation and fails to anticipate the '951 patent's claims 1 and 11.

b. [1b] an image display device displaying the original video stream

Petitioner discusses Senftner's use of the monitor in computer 670, shown in Figure 10, as a display device displaying the original video data stream. This is incorrect. The computer 670 may only be used to display the *output video* - already modified "personalized video" that results after the replacement of the actors has been completed. And the monitor in computer 670 is not a data entry device, as required by claims 1 and 11 of the '591 patent. (*See also* Ex. 1006 claims 40, 56, 61, 73, 79, 85 (reciting display of personalized video output of computing device.)

c. [1c-i] a data entry device, operably coupled with the image capture device and the image display device

Petitioner argues that "Senftner discloses data entry devices meeting the requirements of limitation [1c-i]. Figure 10 of Senftner shows a computer (670) having a keyboard (not numbered) and a display device (a monitor) for creating personalized videos." (Paper No. 3 at 20) (internal citations omitted).

First, Petitioner incorrectly implies that the computer 670 in Figure 10 of Senftner is used "for creating personalized videos." Yet Senftner teaches that it is the computing device 600 – and not the remote computer 670 - in Figure 10,

which is used for creating personalized video. (Ex. 1006 at 20:24-25.) Further, Figure 10 of Senftner shows that the interface between the computing device 600 and the remote personal computer 670, is performed via the network 640. (*Id.* Figure 10; *Id.* at 20:24-42.)

Therefore, the data entry devices of Senftner's remote computer 670 (whether keyboard, mouse or other human interface means) are not capable of serving the function and application of claims 1 and 11. Of course, the monitor shown in Figure 10 of Senftner is not a data entry device.

By contrast, the data entry device claimed in the subject claims of the '591 patent is embedded within the apparatus. Accordingly, Senftner fails to disclose the limitation of a data entry device, operably coupled with the image capture device and the image display device as recited in the '591 patent's claims 1 and 11.

d. [1c-ii] operated by a user to select the at least one pixel in the frame of the user input video data stream to use as the second image, and further operated by the user to select the at least one pixel to use as the first image;

In the '591 patent, both the first and second image are extracted following a user selecting at least one pixel in the frame of the video data stream. Senftner is different. In Senftner, the original image and the replacement image are *not* selected by a user via a user input by operation of a data entry device.

Instead, in Senftner, a user transmits a request via the Internet or some other network or via a facsimile, phone or mail – not an input device. The request may identify a specific video to be retrieved from the video library 470. It may identify an actor model to be retrieved from the actor model library 440. (Ex. 1006 at 18:1-12.) And the request may not be issued by a human user, but some other unspecified software or process. (*Id.* at 18:6-7.) The user/request of Senftner does not use a data entry device “to select the at least one pixel in the frame of the user input video data stream to use as the second image, and further operated by the user to select the at least one pixel to use as the first image” as recited by the ‘591 patent’s claims 1 and 11.

Senftner teaches that the replacement image is accompanied by a name or identifier that is then used to reference the replacement image in the process of video personalization. (Ex. 1006 Figure 8.) The replacement image is *captured*, not user- selected – let alone selected by a user by identifying at least a pixel from a digital video. (*See id.* Figure 1 (showing input to image modeling process 100); *id.* Figs. 8- 9 (showing capture devices 420); *id.* Figs. 10-11 (showing capture devices 660).) Once the image of the new actor has been *captured* (and not selected by a user), it is processed by block 110 of the image modeling process 100 to obtain a 3D representation of the new actor. The 3D model of the new actor 435 is stored in the Actor Model Library 440. (*Id.* Figs. 8-9.)

Petitioner argues that because “[t]he act of ‘replacing’ may involve identifying all pixels within each video frame that represent an image of the original object to be replaced” (Ex. 1006 at 8:60-62), then Senftner teaches a user selecting at least a pixel. But Senftner needs to “identify[] *all* pixels” because the replacement performed in Senftner is a two-step *overwrite* process. (*Id.* at 8:51-67; *id.* at 9:1-5.) Therefore, in Senftner *all* the pixels within the video frame must necessarily be identified to perform the replacement method, or overwriting. In the ‘591 patent, by contrast, the first and second images may be extracted from the selection of at least *one* pixel.

Petitioner incorrectly contends that “Senftner further discloses matching pixel(s) from the original image to pixel(s) in the new image, on a “pixel-by-pixel and frame-by-frame basis” to achieve replacement. (*Id.* at 8:52 to 9:5). Again, this a misreading of Senftner.

As noted above, replacement in Senftner is a two-step-overwrite process. Moreover, Senftner refers to “altering or manipulating *the actual data* stored in the digital video on a pixel-by-pixel and frame-by-frame basis.” (*Id.* at 8:52-54) (emphasis added.) The “actual data” manipulated is data processed by block 210 in the video preparation process 200 of Figure 1, to obtain the position of the original actor's face within the video frame and relative size within the coordinate space of a simulated digital camera viewing the scene. Thus the manipulation of

Senftner is not a pixel manipulation, but data manipulation.

Therefore, Senftner fails to disclose limitation [1c-ii], and thus fails to anticipate.

e. [1d] wherein said data entry device is selected from a group of devices consisting of: a keyboard, a display, a wireless communication capability device, and an external memory device;

As explained above in connection with limitations [1b] and [1c-i], Senftner does not teach a display as a data entry device. Petitioner fails to recognize that the monitor in computer 670 (Ex. 1006 Figure 10) is not a data entry device. Senftner fails to disclose this limitation of the '591 patent, and thus fails to anticipate.

f. [1e] a digital processing unit operably coupled with the data entry device, said digital processing unit performing:

Petitioner submits that “digital processing unit” is not defined by the '591 patent and thus should carry its plain and ordinary meaning. A person of ordinary skill in the art would understand that a digital processing unit (or “DPU”) is a general term used to mean a device (unit) in which digital processing functions are performed. These processing units may include for example Graphics Processing Units (GPUs), Image Signal Processing Units (ISPs), and others. These processing units can be stand-alone in an integrated circuit or may be embedded into Applications Processors, DSPs, and other

Systems on Chip (SoC) devices. For example, these units are able to interface, if so architected, to other processing units in the system, to external devices such as cameras, video recorders, displays, and the like.

Therefore, a person of ordinary skill in the art would not equate a DPU with the computer 670 (*id.* Figure 10) taught by Senftner. It would make no sense to embed a computer (as shown by Senftner's computer 670) into the apparatus of the '591 patent's claims 1 and 11. In the '591 patent, the DPU is embedded into the apparatus (i.e., the apparatus comprises a DPU)). (*See Ex. 2007.*) And a person of ordinary skill in the art would readily understand that a DPU can be embedded in the apparatus of claims 1 and 11, whereas Senftner's computer 670 could not be embedded in the apparatus of claims 1 and 11, whereas Senftner's computer 670 could *not* be embedded in the apparatus of claims 1 and 11.

Petitioner asserts "[t]he computers of Senftner also perform the claimed functions required by limitations [1e-i] through [1e-vii], below." (Pet. at 24). However, as noted in sections [1e-i] through [1e-vii], below, Senftner fails to disclose a DPU performing the functions required by limitations [1e-i] through [1e- vii] of the '591 patent's claims 1 and 11. Consequently, Senftner fails to anticipate the '591 patent's claims 1 and 11.

**g. [1e-i] identifying the selected at least one pixel
in the frame of the user input video data stream;**

With respect to limitation [1e-i], Petitioner states:

Senftner further discloses matching pixel(s) from the original image to pixel(s) in the new image, on “a pixel-by-pixel and frame-by-frame basis” to achieve the replacement. (*Id.* at 8:52- 9:5.) Senftner further discloses that portions of the original image in the frame of a video must be identified to achieve the replacement. (*Id.* at 8:60-62.)

(Paper No. 3 at 24.)

As discussed above in connection with limitation [1c-ii], identification of the original image (*i.e.*, actor) in the digital video and the replacement image (also an actor) in Senftner is not a result of a user selecting at least one pixel in the frame of the digital video data stream. Petitioner simply ignores the ‘591 patent’s limitation that the “selected at least one pixel in the frame” must be selected from “the user input video data stream.” Senftner specifically teaches that the “actor model library” and the “prepared videos” are stored in and then retrieved from *libraries – not video data streams*. (Ex. 1006 at 4:15-24). Selecting a “new actor model” from the “actor model library” and “selecting a video from the video library” are not equivalent to “identifying the selected at least one pixel in the frame of the user input video data stream” as recited in the ‘591 patent’s claims 1 and 11. Consequently, Senftner fails to anticipate the ‘591 patent’s claims 1 and 11.

h. [1e-ii] extracting the identified at least one pixel as the second image;

With respect to limitation [1e-ii], Petitioner states:

As discussed in [1c-ii] and [1e-i], Senftner's system performs the replacement process on a pixel-by-pixel and frame-by-frame basis, and a POSITA would understand that selecting/extracting an image necessarily requires selecting/extracting the pixel information relating to the selected image. (Ex. 1003 at ¶49).

(Paper No. 3 at 24-25.)

As discussed above in connection with limitation [1e-i], Senftner fails to disclose the "identifying the selected at least one pixel in the frame of the user input video data stream" as recited in the '591 patent's claims 1 and 11 therefore fails to disclose the "extracting identified at least one pixel as the second image" as recited in the '591 patent's claims 1 and 11.

Further, and as discussed in connection with limitations [1c-ii] and [1e-i], Senftner performs its 'replacement' as a two-step overwrite process. Therefore, there is no extraction of the original image from a digital video stream and certainly no extraction of an image resulting after a user has entered at least a pixel in a frame of a digital video data stream.

i. [1e-iv] receiving a selection of the first image from the original video data stream;

As discussed in connection with limitations [1c-i], [1c-ii], and [1e-i], Senftner does not teach selecting an image from a video data stream as a result

of a user entering at least a pixel in a frame of the video data stream.

j. [1e-v] extracting the first image;

Senftner fails to meet this requirement. In the '591 patent, the extracting of the first image follows the same methodology as extracting the second image. As already established in connection with limitation [1e-ii], Senftner does not perform this step.

k. [1e-vi] spatially matching an area of the second image to an area of the first image in the original video data stream, wherein spatially matching the areas results in equal spatial lengths and widths between said two spatially matched areas; and

Senftner does not perform matching in the spatial domain (spatially matching).

This is a significant difference. The processing performed in Senftner is on encoded (*i.e.*, compressed) video data. In the '591 patent the spatial matching occurs in the spatial domain, which is the uncompressed domain. In contrast, Senftner recites a 3-D domain which is related to *compressed* video data.

Petitioner asserts:

Senftner discloses limitation [1e-vi]. In order to replace the original actor's image (first image) with the new actor's image (second image), the images must necessarily be spatially matched to the X-Y dimensions (length-width). (*Id.* at 10:29-46, 12:27-45.) (Ex. 1003 at ¶ 55.) Thus, Senftner discloses limitation [1e-vi].

Petitioner once more makes an incorrect conclusory statement. This time

it states that “the images must necessarily be spatially matched to the X-Y dimensions (length-width)” (emphasis added). As discussed above, “spatial matching” in the ‘591 patent occurs in the uncompressed spatial domain (*i.e.*, the pixel domain). Senftner uses a compressed domain. (Senftner at 10:40-46). The spatial domain and the compressed domains are two different domains.

(Ex. 1009 at ¶ 29-30.)

As such, Senftner cannot perform spatially matching an area of the second image to an area of the first image in the original video data stream, wherein spatially matching the areas results in equal spatial lengths and widths between said two spatially matched areas.

1. [1e-vii] performing a substitution of the spatially matched first image with the spatially matched second image to generate the displayable edited video data stream from the original video data stream

As discussed above in connection with limitations [1c-ii] and [1e-i], Senftner’s replacement function is a two-step *overwrite* process, and does not align a set of pixels in the special domain. And as discussed in connection with limitation [1e-vi], Senftner cannot perform matching in the spatial domain (spatially matching). As such, Senftner cannot perform of the spatially matched first and second images.

ii. Claim 2

Senftner fails to anticipate dependent claim 2 for the reasons stated above in connection with claim 1, and for the additional following reasons.

Claim 2 recites:

The interactive media apparatus of claim 1 wherein the digital processing unit is further capable of performing: computing motion vectors associated with the first image; and applying the motion vectors to the second image extracted from the user input video data stream, wherein the generated displayable edited video data stream resulting from the substitution maintains an overall motion of the original video data stream.

(Ex. 1001 at 55-63.)

Senftner does not disclose the use of motion vectors recited in claim 2.

Motion estimation is the process of selecting the best offset to a suitable reference area. The computed offset between the “current” region or block and the reference area is the motion vector. *See* Ex. 2010.

Motion vector computation needs a reference area because an offset is measured from one area or block in a reference frame to another area or block in another frame (current frame).

Senftner is not anticipatory because it does not use motion vectors. In Senftner, the position, orientation, and expression of the original actor in the digital video are estimated for each frame of the digital video. This information is then applied to the new actor obtained from the actor modeling

process 100, so that when the new actor is placed over (overwritten) the original actor in each frame of the digital video, the new actor acquires the characteristics (position, orientation and expression) that have been determined for the original actor on a frame-by-frame basis. (Ex. 1006 at 3:3-12; *id.* at 3:35-49; *id.* at 3:59-4:2; *id.* at 9:54-58; *id.* claims 46, 64-65.) Thus, in Senftner, there is no reference frame, and there is no computation of motion.

Instead, each frame is individually processed to acquire the position and orientation relative to the camera. Once the position and orientation are known for the original image in each frame of the digital video, this information is digitally applied to the new actor so the new actor acquires the same position, orientation and expression of the original actor.

As discussed in connection with limitations [1c-i], [1c-ii], and [1e-i], Senftner does not teach selecting an image from video data as a result of a user entering at least a pixel in a frame of the video data.

And Senftner's 3D domain is not the 2D spatial domain, thus Senftner fails to disclose the "second image extracted from the user input video data stream" as recited in the '591 patent's dependent claim 2. Accordingly, Senftner fails to anticipate dependent claim 2.

iii. Claim 8

Claim 8 recites:

The interactive media apparatus of claim 1, wherein the substitution performed by the digital processing device replaces at least a face of a first person from the original video data stream by at least a face of a second person from the user input video data stream.

(Ex. 1001 at 8:14-19.)

Petitioner alleges that Senftner “discloses replacing an original actor’s face with a new actor’s face. (Id. at 9:6-9.)” (Paper 3 at 31); however, Senftner fails to replace the “at least a face of a first person from the original video data stream by at least a face of a second person from the user input video data stream” because the “new actor’s face” of Senftner is not extracted from the user input video data stream as recited in the ‘591 patent’s Claim 8.

iv. Claim 11

Senftner fails to anticipate independent claim 11 for many of the same reasons that it does not render claims 1 and 2 anticipated. Patent Owner specifically incorporates the arguments of claims 1-2 herein.

2. The Claims Are Not Obvious in View of Senftner

An argument to invalidate a patent for obviousness must be supported by “articulated reasoning with some rational underpinning.” *KSR Int’l Co. v. Teleflex, Inc.*, 550 U.S. 398, 418 (2007) (quoting *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir.

2006)). The question cannot be framed in terms of “the specific problem solved by the invention,” *Insite Vision, Inc. v. Sandoz, Inc.*, 783 F.3d 853, 859 (Fed. Cir. 2015) (quoting *Kahn*, 441 F.3d at 988), because “[d]efining the problem in terms of its solution reveals improper hindsight,” *id.* (quoting *Monarch Knitting Mach. Corp. v. Sulzer Morat GmbH*, 139 F.3d 877, 881 (Fed. Cir. 1998)). *See also Cheese Sys., Inc. v. Tetra Pak Cheese & Powder Sys., Inc.*, 725 F.3d 1341, 1352 (Fed. Cir. 2013) (“Among the difficult challenges of applying the doctrine of obviousness is avoidance of even a hint of hindsight.”). Rather, the question is “what the prior art teaches, whether prior art teaches away from the claimed invention, and whether there was motivation to combine teachings from separate inventions.” *Id.*

Obviousness based on a single non-anticipatory reference – i.e., where elements of the claimed invention are absent from the prior art – is especially problematic.

Petitioner fails to establish that the claimed inventions would have been obvious to a person of ordinary skill in the art at the time.

In fact, Petitioner makes no separate arguments that claims 1, 2, 8 and 11 are rendered obvious in view of the teachings of Senftner. Consequently, as matter of law, Petitioners have failed to establish a *prima facie* case of obviousness. Therefore, Petitioner has failed to carry its burden of demonstrating a likelihood

of unpatentability, and *inter partes* review should not be instituted.

B. Ground 2: Claims 3 and 4 Are Not Obvious Over Senftner in View of Levoy

Petitioner challenges claims 3 and 4 as obvious over Senftner in view of U.S. Patent Application Publication No. 2009/0309990 to Levoy (Ex. 1008 (“Levoy”)). Petitioner fails to carry its burden.

1. The Proposed Combination Fails to Disclose All Limitations in the Challenged Claims

Where obviousness is based on a combination of prior art references, a *prima facie* case of obviousness requires a showing that the proposed combination discloses all elements of the claimed invention. *Transocean Offshore Deepwater Drilling, Inc. v. Maersk Drilling USA, Inc.*, 699 F.3d 1340, 1347-48 (Fed. Cir. 2012) (explaining that *prima facie* case is established where, *inter alia*, prior art references teach every limitation of the asserted claims); *see also Cynosure, Inc. v. CoolTouch, Inc.*, 660 F. Supp. 2d 128, 134 (D. Mass. 2006) (“When evaluating whether a claim based on the combination of elements found in prior art is obvious, a court must first, of course, determine that all elements of the claim are found in prior art.”). Petitioner fails to establish this threshold requirement.

Claim 3 recites:

The interactive media apparatus of claim 1, wherein the digital processing unit is further capable of extracting the at least one pixel from the user entering data in the data entry display device.

(Ex. 1001 at 7:64-67.)

Petitioner alleges that Levoy discloses an “apparatus 100 may include various means for receiving a selection of a particular burst image” (Paper 3 at 40); however Levoy fails to disclose “identifying the selected at least one pixel in the frame of the user input video data stream and extracting the identified at least one pixel as the second image” as recited in the ‘591 patent’s claims 1 and 3. In fact, Levoy fails to cure the deficiencies of Senftner as discussed above and therefore, the combination of Senftner and Levoy fails to disclose all claimed limitations. Petitioner fails to carry its burden of demonstrating a likelihood of unpatentability. *Inter partes* review should not be instituted.

Claim 4 recites:

The interactive media apparatus of claim 3, wherein the digital processing unit is further capable of extracting the at least one pixel from the user pointing to a spatial location in a displayed video frame.

(Ex. 1001 at 8:1-4.)

Petitioner alleges that “using touch screen technology to edit pictures, a user would naturally point ‘to a spatial location in a displayed video frame’, as evidenced by Levoy” (Paper 3 at 46); however Levoy fails to disclose “identifying the selected at least one pixel in the frame of the user input video data stream and extracting the identified at least one pixel as the second image” as recited in the ‘591 patent’s Claims 1 and 3. In fact, Levoy fails to cure the deficiencies of

Senftner as discussed above and therefore, the combination of Senftner and Levoy fails to disclose all claimed limitations. Petitioner fails to carry its burden of demonstrating a likelihood of unpatentability. *Inter partes* review should not be instituted.

The proposed combination of Senftner and Levoy does not disclose all claimed limitations. Petitioner fails to carry its burden of demonstrating a likelihood of unpatentability. *Inter partes* review should not be instituted.

2. The Proposed Combination Would Not Have Been Obvious to a Person of Ordinary Skill at the Time of the Invention

Even if all the elements of a claim can be found in the prior art (which is not the case here), the claim “is not proved obvious merely by demonstrating that each of the elements was, independently, known in the prior art.” *KSR*, 550 U.S. at 418. It remains important “to identify a reason that would have prompted a person of ordinary skill in the relevant field to combine the elements in the way the claimed new invention does.” *Id.* “Obviousness ‘cannot be based on the hindsight combination of components selectively culled from the prior art to fit the parameters of the patented invention.’” *Cheese Sys.*, 725 F.3d at 1352 (quoting *ATD Corp. v. Lydall, Inc.*, 159 F.3d 534, 546 (Fed. Cir. 1998)).

Here, Petitioner fails to establish that the claimed inventions would have been obvious to a person of ordinary skill in the art because even if the Senftner and Levoy references were combined, such a combination would still fail to

disclose all the limits of claims 1, 2, 3, 4, 8 and 11. Accordingly, Petitioner has failed to carry its burden of demonstrating a likelihood of unpatentability. *Inter partes* review should not be instituted.

C. Ground 3: Claims 1, 2, 8 and 11 Are Not Obvious Over Sitrick

Petitioner challenges claims 3 and 4 as obvious over U.S. Patent Application Publication No. 2005/0151743 to Sitrick (Ex. 1007.) Petitioner fails to carry its burden.

1. Overview of Sitrick

Petitioner's analysis with respect to Sitrick is not credible. Petitioner misquotes Sitrick, conflates terms used in the claims of the '591 patent with terms used in Sitrick without providing *any* factual or legal rationale for doing so, and provides a "high level" overview of Sitrick that cannot serve to carry Petitioner's burden to institute *inter partes* review.

First, Petitioner misquotes Sitrick's Abstract. Sitrick does not relate to a "predefined audio-visual system..." (Paper 3 at 46) (emphasis added). Rather, Sitrick relates to an "audiovisual presentation." (Ex. 1007 at Abstract.) And Sitrick does not disclose a "predefined presentation" (Paper at 46) but rather a "predefined audiovisual presentation." (Ex. 1007 at ¶ 13) (emphasis added). Self-servingly, Petitioner states Sitrick is "[l]ike the '591 patent..." but there are no predefined audiovisual presentations discussed anywhere in the '591 patent.

Perhaps most troublesome is Petitioner's use of brackets to conflate terms used in Sitrick with terms used in the claims of the '591 patent, without any support or explanation. Indeed, in its Overview, Petitioner casually and inexplicably equates Sitrick's "predefined audiovisual presentation" with the '591 patent's "original video data stream." (Paper 3 at 46.) There is no rationale provided as to why these terms are related or how the '591 patent's original video data stream is the same as Sitrick's predefined audiovisual presentation. Petitioner cannot credibly rely on unsupported statements to carry its burden here.

Petitioner conspicuously characterizes its own discussion of Sitrick's Figure 1 as "high-level." (Paper 3 at 47.) In it, Petitioner fails to discuss the *key* point of Figure 1 – the subsystem 100 which is the mechanism by which the operation of Sitrick is accomplished. As a more thorough review makes clear, Sitrick's subsystem 100 is radically different in both structure and operation than the '591 patent.

Petitioner makes other misstatements in discussing Sitrick's Figure 1. Petitioner misleadingly describes the image 137 as "captured." *Id.* There is simply no support in Sitrick that the image 137 or any other image is captured, and Petitioner cites to none. Petitioner also states that the "output content 170 is provided to a display device." *Id.* Yet there is no display device shown in Sitrick's Figure 1 or otherwise disclosed by Sitrick. Indeed, the only "device"

discussed by Sitrick is a “computing device.” (Ex. 1007 at ¶¶ 69-70 and 79-80.)

2. Claim 1

i. The “limitations” of [1-Preamble-i]

Petitioner begins its analysis of the first preamble “limitations” by misquoting Sitrick. (Paper 3 at 48) (quoting paragraph 31 of Sitrick as stating that the integration subsystem is “an interactive media apparatus for generating a displayable edited video data stream from an original video data stream.”). Even a cursory reading of Sitrick reveals it covers not an apparatus, but a system. And one of skill in the art may implement the Sitrick system in a variety of ways, including software. Thus, Sitrick does not disclose any part of the alleged limitations present in the ‘591 patent’s claim 1 preamble.

ii. The “limitations” of [1-Preamble-ii]

Petitioner first asserts that “Sitrick” discloses the production of a “mask” from pixel data digitally extracted from a frame of the original video. (Paper 3 at 49.) That statement lacks factual support, as there is no citation to Sitrick or any other paper submitted by Petitioner. This is clearly an attempt by Petitioner to equate a “mask” to a “first image” using nothing more than unsupported attorney argument. Patent Owner’s expert in the underlying litigation has declared, in unrebutted testimony, that a mask does not contain pixel values, but rather weights or filter coefficients representing an impulse response or point-spread function of

the filter. *See* Ex. 2009 at 12-14. This expert's testimony reveals that a mask may be produced *from* image, in other words, that one of skill in the art may be able to generate an *image mask*. *Id.* But an image mask is not an image. *Id.* A mask is a mask, and an image is an image. Petitioner's attempt to conflate the two is unsupported and should be rejected.

Petitioner's own cited passages also undermine the assertion that a mask can be understood to be a "first image." (Paper 3 at 49-50.) Sitrick explains that the "tracking" subsystem may compute a mask ... which represents the region ... within the image... *Id.* (emphasis added). This is in accord with Patent Owner's expert's testimony that a mask is an image *representation* and not an image itself.

Petitioner's expert testimony in this regard also undermines Petitioner's own position. Petitioner's expert declares that "a mask is formed by analyzing the image." (Ex. 1003 at ¶ 93). In other words, a mask is different than an image, and is derived from an image. This is in accord with Patent Owner's expert's testimony that a mask does not contain pixel values, but rather weights or filter coefficients. And Petitioner's expert is careful to say that creating a mask involves extracting pixel *information* not pixel *values*. *Id.* Petitioner does not even make the argument that image pixel information is the same as pixel values.

A mask is a mask. An image is an image. Creating a mask from information in an image creates a mask, not an image. Petitioner falls short of its

burden here.

Petitioner's argument then takes a strange turn.

Petitioner discusses facial recognition technology – a technology not present in claim 1 of the '591 patent – and suddenly attempts to equate Sitrick's "reference object" to the '591 patent's "first image." (Paper 3 at 51.) Petitioner does this just a few lines after arguing the "mask" in Figure 7 was the '591 patent's "first image." Notwithstanding this obvious contradiction, Petitioner's argument is misplaced.

In Sitrick a "reference object" is not an image. *See e.g.* (Ex. 1007 at ¶ 49) ("a selected reference objects appears *in* the visual picture image...) (emphasis added). Petitioner cannot now say a reference object is an image (let alone the '591 patent's first image) if Sitrick itself states a reference object is a *subpart* of an image. *Id.*

Petitioner knows this. Petitioner admits that the "reference object" contains information outside the parameters contained by an image, like "position [information] *within* a visual image...*mask information*...and other information." (Paper 3 at 52) (emphasis added). It would make no sense to provide mask information as part of an image because again, a mask is not an image, and the two concepts are incongruent. Petitioner's argument makes no sense and should be rejected.

Petitioner's expert testimony regarding the image recognition process disclosed by Sitrick is not persuasive. The '591 patent's claim 1 does not recite a facial recognition process, let alone an extraction of an image through some facial recognition manipulation. Petitioner argues, relying on its expert's testimony, that "in order to carry out the [image recognition] process...the pixel information relating to the selected reference object is extracted to form an image..." (Paper 3 at 52). Therefore, Petitioner contends, a person of skill in the art would understand that Sitrick discloses forming the "first image" "when the image of the reference object is created to be used by the tracking subsystem" which includes the facial recognition process. (Paper 3 at 53). If Petitioner is correct, then a person of skill in the art would know that, in order to extract information and form an image, he or she would have to employ facial recognition technology. Yet the '591 patent's claim 1 does not employ facial recognition technology. Therefore, the extracting performed in the '591 patent's claim 1 must be accomplished in some way different than what is taught by Sitrick.

Lastly, neither Sitrick nor Petitioner's expert indicate the source from which the "pixel information" is being extracted in Sitrick. Petitioner states "Sitrick discloses digitally extracting at least one pixel of the reference object to form a first image." (Paper 3 at 51). But that statement is unsupported by any citation to Petitioner's expert or the actual Sitrick reference. Petitioner goes on to argue that

the pixel information is “necessarily extracted from the original video data stream” and cites to its expert for this proposition. (Paper 3 at 52). But Petitioner’s expert is careful to avoid saying anything at all as to the *source* of the extraction. (Ex. 1003 at ¶¶ 93-94). Indeed, Petitioner’s expert does not say that the extraction takes place from the “original video data stream” and further, does not say that the extraction occurs digitally. *Id.*

Petitioner’s analysis is replete with attorney argument wholly devoid of any factual support by its expert. Petitioner cites to Sitrick’s ¶ 87 in arguing that a “first image” is replaced by a “second image.” (Paper 3 at 53). Yet the replacement in Sitrick’s cited passage is “of a portion of the first audiovisual presentation.” (Ex. 1007 at ¶ 87). And, neither Sitrick nor Petitioner tell us with any clarity what an audiovisual presentation is – or how it is the same as a “video data stream.” Throughout Sitrick, the disclosure is careful to never equate an image or a sequence of images with an “audiovisual presentation.” (Ex. 1007 at ¶ 06) (discussing integration of an image into an “audiovisual presentation”). Clearly, if Sitrick wanted to disclose substituting an “image” into an “image” it would have said so. Instead Sitrick draws a clear distinction between an image and a “presentation.” Petitioner’s argument again fails.

Next Petitioner admits that a “mask is [a] type of reference object.” (Paper 3 at 53). And as shown based on the testimony of Patent Owner’s expert, because a

mask cannot be an image, Petitioner's statement forecloses the possibility that a reference object is itself an image. Worse, Petitioner's citation to Sitrick does not support the proposition that a mask is a type of reference object, but rather discusses a masking operation taking place in the transform mesh subsystem, coupled with a wrapping texture subsystems. (Ex. 1007 at ¶ 40). Petitioner's cited passage should therefore be given no weight.

Thus, Sitrick does not disclose any part of the alleged limitations present in the '591 patent's claim 1 preamble.

iii. [1a] - An image capture device capturing the user input video data stream;

The cited passages in Sitrick provide: "The user image can be *provided* by any one of a number of means..." (Ex. 1007 at ¶ 12) (emphasis added) and "[a] digital camera would be used to *take* a number of pictures..." (Ex. 1007 at ¶ 139) (emphasis added). In the first passage, an image need not be *captured* at the time it is *provided* to the system. And, tellingly, neither Sitrick nor its claims contain any disclosure of a capture device *as part of* an apparatus. In the second passage, Sitrick discloses capturing (i.e. "take") images but does so unconnected to providing these to the system claimed.

Most importantly, a "user input video data stream" should be construed as "a *sequence of images* digitally recorded by a user separate from the original video data stream." (Ex.1005 at 9) (emphasis added). Neither of Sitrick's paragraphs 12

or 139 discloses capturing a “*sequence*.”

iv. [1b] – an image display device displaying the original video data stream.

Sitrick does not use a device to display an “original video data stream.” The only display device disclosed in Sitrick appears not in Figures 1-6, as Petitioner asserts, but in Figure 13. The display device in Figure 13 displays the “final composited output 1399.” (Ex. 1007 at ¶ 123). The “final composited output” of Figure 13 in Sitrick “is representative of the first audiovisual presentation with selected portions being *replaced* by user object image content” (Ex. 1007 at ¶ 123). However, the original video data stream in the ‘591 patent is displayed *prior to the substitution* operation occurring. That is, at the time the “original video data stream” is displayed, a substitution has not yet taken place – whereas in Sitrick the display device shows the “final composited output” *after* a substitution has taken place. Accordingly, Sitrick does not disclose an image display device displaying the original video data stream.

v. [1c-i] – a data entry device, operably coupled with the image capture device and the image display device;

Petitioner cites to a preferred embodiment to support the proposition that a general purpose computer implements the Sitrick system. Reducing Sitrick to one of its preferred embodiments is not proper. *Inline Plastics Corp. v. EasyPak, LLC*, 799 F.3d 1364, 1367 (Fed. Cir. 2015). But even if allowed, the argument is

factually incorrect. “A general purpose computer is often understood to be a large system, capable of supporting remote terminal operations.” *See generally* Ex. 2009. This includes systems like mainframes, which include remote terminal access, but no keyboard input. Indeed, Sitrick itself does not mention the word “keyboard.”

More importantly, Petitioner is attempting to equate “compositing” with the “integration subsystem.” (Paper 3 at 56). But there is no support for that proposition either in Sitrick itself or Petitioner’s expert declaration. All evidence of record points to the conclusion that the compositing and the integration subsystem are two different things. Indeed, Sitrick’s own intrinsic record discusses the “compositing means” as being made up of a “masking subsystem” – not an integration subsystem. (Ex. 1007 at ¶ 62) (further defining “correlation means” as including the integration subsystem.); (Ex. 1007 at ¶ 43) (describing the Ultimatte compositing and masking subsystem). Tellingly, the compositing means that Petitioner now equates with the integration subsystem appears only in Figures 11-13, and is not part of the integration subsystems disclosed in Figures 1-10.

Petitioner’s argument also loses sight of the “operably coupled” requirement present in this limitation. That is, the “data entry device” the “image capture device” and the “image display device” of claim 1 of the ‘591 patent must *all* be “operably coupled.” Petitioner argues that because the “image data” of Sitrick is

provided by a “video camera,” the camera must be “operably coupled to the general purpose computer. (Paper 3 at 57, citing Dr. Delp’s Decl. at ¶ 100). This is not only an unsupported leap, but is easily disproven. A video camera can serve as the source of image data. But it need not be “operably coupled” to a general purpose computer to do so. A person of skill in the art can use a video camera in San Francisco, record content on a memory card, and fly to New York, leaving the video camera behind. Upon arrival in New York, the memory card can be inserted on a general purpose computer and the memory card contents are extracted. In that scenario, the video camera is the source of the image data but it is not “operably coupled” to the general purpose computer.

Strangely, Petitioner argues that a person of skill in the art would know that a “data entry device” *could* be coupled to an “image capture device” if the “image capture device” was operably connected to the general purpose computer. That argument is incorrect. That a person of skill knows a digital camera can be operably connected to a general purpose computer has no bearing on whether the digital camera can be operably coupled to a keyboard, or other input device. In fact, even assuming all three – the camera, keyboard, and computer are interconnected in Sitrick (though they are not as shown above), a user could not take a keyboard and use it to enter text or manipulate the inputs on a digital camera menu screen.

And, that a user “selects” an image that is integrated into Sitrick’s audiovisual presentation does not mean that “the general purpose computer...interact[s] with the image capture device.” (Paper 3 at 57). Indeed, a user could take a single image on a digital camera, and then simply insert a memory stick containing that image into the general purpose computer. In that instance, the user does not use any input device to “select” the image. He or she simply selects the image by using it. Of course, the most common example of users selecting images on their digital cameras is by making use of the touchscreen or inputs *in the camera itself*, not by using a user input device *outside* the digital camera itself.

Finally, Petitioner argues that Sitrick discloses a general purpose computer operably connected to the image display device. This is incorrect. The words “display device” do not appear anywhere in Sitrick. Figure 13 discusses a “display unit” and neither Petitioner’s expert nor the petition explain how or why a “display unit” is the same as a “display device.” In discussing Figure 13, Sitrick provides that the “final composited output 1399” is “*provided as an input signal to display unit 1360.*” (Ex. 1007 at ¶ 123) (emphasis added). There is little discussion in Sitrick over the input signal *path* – and the path an input signal can take to a display device is varied, and often times not direct. In certain circumstances, a video input signal goes to a satellite in space before being shown by a display

device – no person of skill in the art would venture to argue the display device is operably coupled to the device sending the input signal. Because Sitrick’s use of “input signal” is too attenuated to infer an “operably coupled” connection, Petitioner has not shown Sitrick’s display device is operably coupled to the general purpose computer.

Petitioner fails to demonstrate that Sitrick discloses, teaches or suggests the limitations present in [1c-i].

- vi. [1c-ii] ... operated by a user to select the at least one pixel in the frame of the user input video data stream to use as the second image, and further operated by the user to select the at least one pixel to use as the first image;**

Petitioner carries over to this argument the incongruence and fallacies present in its discussion as to limitation [1c-i] above. Here, Sitrick does not disclose that a user operates Sitrick’s computer to “select the at least one pixel,” as Petitioner claims. (Paper 3 at 58). The user selected image of Sitrick is not the result of a user’s operation or input into a computer. Rather, Sitrick discloses “The selection of best images can be performed by a general purpose computer running a very simple algorithm, such as selecting the best fit image or the two physically adjacent best fit images...wherein the output image is akin to a linear interpolation between the two input images from the database.” (Ex. 1007 at ¶ 46) (emphasis added). Thus, Sitrick reveals that an algorithm selects images and that the

selection criteria is embedded into the algorithm itself.

Petitioner then equates the predefined audiovisual presentation to the ‘591 patent’s “first image” (Paper 3 at 59), seemingly forgetting that just a few pages before this argument it equated that very same “predefined audiovisual presentation” to the ‘591 patent’s “[an original video data stream].” *Compare* Paper 3 at 59 with Paper 3 at 46. These inconsistent positions reveal Petitioner’s argument to be untenable.

Thus, Sitrick does not disclose this limitation.

- vii. [1d] wherein said data entry device is selected from a group of devices consistent of: a keyboard, a wireless communication capability device, and an external memory device;**

The user selected image of Sitrick is not the result of a user’s operation or input into a computer. Rather, Sitrick discloses “The selection of best images can be performed by a general purpose computer running a very simple algorithm, such as selecting the best fit image or the two physically adjacent best fit images...wherein the output image is akin to a linear interpolation between the two input images from the database.” (Ex. 1007 at ¶ 46) (emphasis added). And, as shown above in reference to limitation [1c-i], a general purpose computer does not necessarily include a data entry device, such as a keyboard. Indeed, Sitrick does not even mention a keyboard. Thus, Sitrick does not disclose this limitation.

viii. [1e] a digital processing unit operably coupled with the data entry device, said digital processing unit performing;

Petitioner again misreads Sitrick to require a general purpose computer for the implementation of the image integration subsystem. Yet Sitrick only requires a general purpose computer for the implementation of its “compositing means” as disclosed in Figures 11 through 13. Indeed, the general purpose discussed in paragraph 115 of Sitrick is presented only in the preferred compositing embodiment including a three-dimensional graphics engine.

Even assuming a general purpose computer was required for all embodiments disclosed by Sitrick, Petitioner grossly oversimplifies the components of such a computer. It is not true that “normal computer components” include a digital processing unit. Petitioner cites no support for the statement that a computer’s CPU is also a digital processing unit (Paper 3 at 59). That is because a CPU and a DPU are often implemented as different hardware on a computer. A digital processing unit is hardware especially adapted for graphics or graphics intensive applications. DPUs often take the shape of accelerators or graphics card, which the CPU simply provides computational analysis in a separate part of the computer. Thus, Sitrick does not disclose limitation [1e].

Moreover, because Petitioner cannot credibly demonstrate Sitrick contains a DPU (it does not), Sitrick cannot perform the steps required by limitations [1e-1]

through [1e-vii] below.

ix. [1e-ii] identifying the selected at least one pixel in the frame of the user input video data stream;

As explained above relative to the [1-PREAMBLE-ii] and [1c] limitations, Sitrick does not support Petitioner’s assertion that a mask is an image, let alone the ‘591 patent’s “first image.” Sitrick’s image integration subsystem is not part of the pixel domain because it uses a composite and mask subsystem that necessarily includes information other than pixel values. (Ex. 1007 at ¶ 40). Sitrick further relies on the use of a transform mesh and a wrap texture in its integration subsystem. As Sitrick makes clear, the transform mesh operation relies on geometry consisting of “coordinates of points which may be used to describe polygons.” Polygon coordinate (or the use of polar coordinate subsystems) is far from the use of pixels disclosed and required by the ‘591 patent. It is not in the spatial domain – the pixel domain of the ‘591 patent – because it exists in the transform (transform mesh) domain.

Finally, although Petitioner points to identifying “pixel texture” (Paper 3 at 60), Sitrick makes clear that “the creation of a texture map is not a necessary part of this invention” and that “texture maps are generally produced once and used over and over.” (Ex. 1007 at ¶ 43). The sparing use of texture maps and the “recycling” of texture maps as disclosed by Sitrick forecloses Petitioner’s reading that a unique texture map serves as identifying information relating to a pixel in

frame. Thus, Sitrick does not disclose limitation [1e-i].

**x. [1e-ii] extracting the identified at
least one pixel as the second image**

As previously shown in limitations [1c-ii] and [1e-i] above, Sitrick does not disclose that a replacement image may be identified. Additionally, Sitrick does not disclose the “extracting” of “at least one pixel” as required by the ‘591 patent. Indeed, the word “extracting” does not appear in Sitrick. Instead, in Sitrick, the user audiovisual information that is *a priori* known to the image integration subsystem is simply “user object geometric information.” (Ex. 1007 at ¶ 101). The “replacement image” in Sitrick is representative of a pixel texture of the surface of a user object. “The pixel texture is visual image data that corresponds to viewing the object from all orientations. This pixel texture is commonly referred to as a texture map, a texture map image, or a texture.” *Id.* (emphasis added). A texture map is not an image. It is – as Sitrick discloses – image data that is taken and manipulated in such a way so as to allow viewing an object from all orientations. *Id.* This is far from the concept of an image – a set of pixel values arranged in a two-dimensional coordinate plane (the pixel domain) – as described by Patent Owner’s expert. (Ex. 1009 at 12).

Accordingly, Sitrick does not disclose limitation [1e-ii].

xi. [1e-iii] storing the second image in a memory device operably coupled with the interactive media apparatus;

Petitioner's attempt to demonstrate the presence of this limitation in Sitrick is also misplaced. Its reference to Sitrick's paragraph 115 to justify the presence of a general computing device having a memory and storage is misguided, because, as previously discussed, Figure 11 is an embodiment of compositing means within a three dimensional (3D) graphics engine. (Ex. 1007 at ¶ 115). It does not concern or relate to the entirety of Sitrick's disclosure, including Sitrick's image integration subsystem.

Further, Sitrick fails to disclose storing the user's images in memory because what is stored in memory are not images, but rather representative pixel textures of the surface of a user object. As discussed above, these pixel textures consist of "visual image data that corresponds to viewing the object from all orientations. This pixel texture is commonly referred to as a texture map, a texture map image, or a texture." (Ex. 1007 at ¶ 101).

Accordingly, Sitrick discloses storing the texture map, texture map images or textures in memory – not storing images in memory. Thus, Sitrick does not disclose the limitation present in [1e-iii].

xii. [1e-iv] receiving a selection of the first image from the original video data stream;

In its argument regarding this limitation, Petitioner again improperly equates

a “first image” with a “mask or reference object.” It further conflates a “user selected image” with what is actually taught by Sitrick – an image texture map or textures. And as previously discussed, Sitrick does not require a user selection because the selection process is automated. (Ex. 1007 at ¶ 46) (“The selection of best images can be performed by a general purpose computer running a very simple algorithm, such as selecting the best fit image or the two physically adjacent best fit images...wherein the output image is akin to a linear interpolation between the two input images from the database.”) (emphasis added).

Thus, Sitrick does not disclose limitation [1e-iv].

xiii. [1e-v] extracting the first image;

As discussed above in the [1-PREAMBLE-ii] limitation, Sitrick does not extract “a first image such as a mask or reference object image.” Again, a mask is not an image, and Petitioner cannot credibly claim that Figure 7 or Sitrick’s ¶¶ 48-49 shows the extraction of a “mask image.”

Again, in Sitrick a “reference object” is not an image. (See e.g. Ex. 1007 at ¶ 49) (“a selected reference objects appears *in* the visual picture image...”) (emphasis added). And Petitioner should know this. Petitioner admits that the “reference object” contains information outside the parameters contained by an image, like “position [information] *within* a visual image...*mask information*...and other information.” (Paper 3 at 52) (emphasis added). It makes no sense to

provide mask information as part of an image because again, a mask is not an image, and the two concepts are incongruent. Petitioner's argument is fatally flawed and should be rejected.

Consequently, Sitrick does not disclose limitation [1e-v].

xiv. [1e-vi] spatially matching an area of the second image to an area of the first image in the original video data stream, wherein spatially matching the areas results in equal spatial lengths and widths between said two spatially matched areas;

Sitrick does not disclose limitation [1e-vi]. Sitrick accomplishes the overlay not by “aligning a set of pixels in the spatial domain” (as Patent Owner has defined spatially matching) (Ex. 1009 at 14), but rather by “keying.” (Ex. 1007 at ¶ 88). Sitrick discloses that keying is not spatial matching, but rather “is accomplished by using a video mixer, which selectively chooses proportions of signals from the first video image and the second video image, responsive to a mask.” *Id.* Other variants of keying are discussed by Sitrick, including luminance keying (Ex. 1007 at ¶ 89) and chrominance keying (Ex. 1007 at ¶ 90). In luminance keying the substitution is not between image A and image B, but may involve “an independent third image.” (Ex. 1007 at ¶ 89). A “common example of chrominance keying in operation is a weather report as in television newscasts in the United States...” (Ex. 1007 at ¶ 91). In both luminance and chrominance keying there is no image to image *substitution*, but rather just overlaying.

Finally, Patent Owner's expert has rebutted the idea that mapping, stretching, rotating, scaling, zooming, curling, shearing, distorting and morphing of the size of a replacement image can be considered spatially matching. (Ex. 2003 at ¶ 26-29).

Accordingly, Sitrick does not disclose limitation 1e-vi.

xv. [1e-vii] performing a substitution of the spatially matched first image with the spatially matched second image to generate the displayable edited video data stream form the original video data stream

As discussed in Sitrick's Figures 5 and 6, Sitrick operates by generating a visual representation of a 3-D user image (*i.e.*, a wire-frame) so a 2-D image can be rendered prior to the overlay step. Figures 5 and 6 of Sitrick show this morph functionality.

Figure 11 shows a 3-D engine used to perform the video processing and image integration, where the final composited image is outputted. Likewise, Figure 12 also shows the 3-D engine, where the user image video processing is performed, but the actual blending (keying) to produce the final composited video out is performed at the frame buffer and blender 1220. Additionally, as discussed in limitations [1e-v] and [1e-vi], Sitrick performs matching only in during face recognition, but *not* during the overlay process. (Ex. 1007 at ¶ 72-73).

And, as has become clear thus far, Sitrick does not substitute but rather *overlays*. *See generally* Ex. 2008. Even assuming an overlay operation was

performed with images (it is not, it is performed with masks, and masks are not images), the section of the replacement image would not “take the place” of the section of the image being replaced. That is, both the replacement image and original image would occupy the same space. A user would only see the replacement image, but one theoretically could undo the overlay operation and – after removing the replacement image – would be able to see the original (unedited) image content.

As such, Sitrick does not disclose, teach, or suggest all limitations of claim 1 and therefore does not render claim 1 obvious.

3. Claim 2 - The interactive media apparatus of claim 1 wherein the digital processing unit is further capable of performing: computing motion vectors associated with the first image; and applying the motion vectors to the second image extracted from the user input video data stream, wherein the generated displayable edited video data stream resulting from the substitution maintains an overall motion of the original video data stream:

Claim 2 generally concerns the output or “generated displayable edited video data stream.” But Petitioner’s analysis concerns the audiovisual presentation that is *input* to Sitrick’s image integration subsystem. (Ex. 1007 at ¶ 62-65) (discussing an embodiment comprising “a source of a first audiovisual presentation” and further discussing the “form” of the audiovisual presentation being a “visual picture” where the “visual picture” may be *encoded* using the MPEG technique). Because claim 2 concerns the *output* video data stream

generated by the '591 patent's apparatus, and the cited references in Sitrick concern the encoding of the *input* – the comparison is of little value.

Claim 2 recites “computing the motion vectors associated with the first image” and applying these to the “second image.” The computation of motion vectors for the first and second image is not the same as the computation of MPEG motion vectors in *encoded video*. (Paper 3 at 65) (discussing POSITA's understanding of motion vectors in encoded video). Claim 2 computes the motion vectors *after* the images have been extracted from the video data stream so that at the time the computation of the motion vectors takes place the images are not in an MPEG encoded format. Accordingly, although Sitrick may teach the computation of motion vectors for an MPEG encoded video, it does not teach the computation of motion vectors *after* images have been extracted from a video data stream.

The cited passages at Sitrick's ¶ 100 and 104 are irrelevant to the analysis for claim 2. Those passages discuss using user object geometric information to update the transform parameters of an object so that the object may be reconstructed or updated. *Id.* The cited passage provides no support for Petitioner's claim that Sitrick discloses a “match-up” of a first and second image using motion vector information. Geometric information and motion vectors are not equivalent, and certainly not equivalent to a person of ordinary skill in the art. Petitioner cannot meet its burden by simply pointing to random sections of Sitrick.

Plainly, Sitrick does not disclose all limitations of claim 2 and does not render obvious claim 2.

4. Claim 8 - The interactive media apparatus of claim 1, wherein the substitution performed by the digital processing device replaces at least a face of a first person from the original video data stream by at least a face of a second person from the user input video data stream.

Sitrick does not disclose the “substitution” step of claim 8. Sitrick’s “replacement” is an “overlayment.” (Ex. 1007 at ¶ 87). *See generally* Ex. 2008. Even assuming Sitrick’s overlay operation was performed with images (it is not, it is performed with masks, and masks are not images), the section of the replacement image would not “take the place” or “substitute” the section of the image being replaced. Sitrick does not render obvious claim 8.

5. Claim 11

Sitrick does not render claim 11 obvious, for the same reasons it does not render claims 1-2 obvious.

6. Claims 3 and 4 are Not rendered Obvious by Sitrick in View of Levoy

i. Scope and Content of the Prior Art

As discussed in response to Ground 2, Levoy does not describe systems and methods incorporating selected portions of an image into another image or creating a new composite image.

ii. No Rationale to Combine

As more fully described above, Senftner and Sitrick fail to disclose or render obvious the invention taught by the '591 patent. Additionally, a person of ordinary skill in the art would have no reason to combine Levoy with Sitrick.

As Petitioner concedes, Sitrick is not targeted to stand-alone portable devices. Sitrick involves computational intensive applications, with very high power consumption, and poorly adapted to portable devices. In effect, Sitrick requires 3-D engines and MPEG encoding to perform keying task. The overhead in architecture introduced by Sitrick makes it impossible to have a handheld device perform the application disclosed. Sitrick as it exists could not simply be ported to a handheld device operated by a touchscreen – the power requirements, the computational needs of the Sitrick application could not be available to a user in the portable or handheld space.

A person of ordinary skill in the art would know, from reading Sitrick, that the application requires “3-D accelerators, commonly sold for *personal computers* by vendors such as Apple, Matrox, Diamond, S3, and a multitude of others.” (Ex. 1007 at ¶ 42). These devices are *required* and must be part of Sitrick because they are “special purpose hardware ... that accommodate ... the operations of the transform mesh subsystem and the wrap texture subsystem in a hardware assisted manner.” *Id.* Sitrick acknowledges the huge data burden – not easily

accomplished in the type of small touchscreen device disclosed by Levoy: “the amount of data that has to be processed generally implies that this step needs to be performed by a hardware-assisted or special purpose circuit.” (Ex. 1007 at ¶ 43).

Moreover, the input sources and output sources in Sitrick are not contained within the apparatus. In the case of Sitrick, the audiovisual presentation is predefined and it is sent from a source. (Ex. 1007 at ¶ 10); *see also* (Ex. 1007 at ¶¶ 18, 115, 121). (describing how the Sitrick system accepts a video input signal representative of the first audiovisual presentation and supplies that video input signal to a frame buffer and MPEG encoder).

Thus, without fundamentally altering the application in Sitrick, a person of ordinary skill in the art could not implement the Sitrick system on a portable or handheld device including a touchscreen. Therefore, there is no rationale to combine Sitrick and Levoy.

iii. Claim 3 - The interactive media apparatus of claim 1 wherein the digital processing unit is further capable of extracting the at least one pixel from the user entering data in the data entry display device.

As discussed above, claim 3 is not invalid on §112 grounds. Contrary to Petitioner’s assertion, Sitrick in view of Levoy does not render claim 3 obvious.

As shown above relative to claim 1, Sitrick does not disclose an extracted user selected image. Petitioner states that “Sitrick discloses digitally extracting at least one pixel of the reference object to form a first image.” (Paper 3 at 51). But

that statement is unsupported by any citation to the Sitrick reference or to Petitioner's expert declaration. Petitioner goes on to argue that the pixel information is "necessarily extracted from the original video data stream" and cites to its expert for this proposition. (Paper 3 at 52). But Petitioner's expert is careful to avoid saying anything at all as to the *source* of the extraction. (Ex. 1003 at ¶¶ 93-94). Indeed, he does not say that the extraction takes place from the "original video data stream" and further, does not say that the extraction occurs digitally. *Id.*

Further, and as discussed with respect to claim 1, Sitrick does not disclose a data entry device. The reference image in Sitrick is simply detected from the first audiovisual presentation based on general information known by the tracking subsystem and a correlation function. The first audiovisual presentation is predefined and not captured by Sitrick. *See generally* (Ex. 1007, Abstract, [0011], [0013]).

And Sitrick does not need a data entry device to perform a selection of image(s). As shown in Sitrick's Figure 9B, a database of user replacement images supplies the user replacement object images to the image integration subsystem. The database also contains user geometry information data so the user specified replacement is selected based on the best match with the detected reference image. (Ex. 1007 at ¶ 0111).

As discussed above, a person of ordinary skill in the art would know that

Sitrack includes a huge data burden – not easily satisfied in the type of small touchscreen device disclosed by Levoy: “the amount of data that has to be processed generally implies that this step needs to be performed by a hardware-assisted or special purpose circuit.” (Ex. 1007 at ¶ 43). Thus, Sitrack in view of Levoy does not teach or suggest the limitations of claim 3, and does not render claim 3 obvious.

iv. Claim 4 - The interactive media apparatus of claim 3 wherein the digital processing unit is further capable of extracting the at least one pixel from the user pointing to a spatial location in a displayed video frame

Contrary to Petitioner’s assertion, Sitrack in view of Levoy does not render claim 4 obvious.

Petitioner is correct that Sitrack does not disclose (specifically or otherwise) using a touchscreen as the computing device. That would make no sense. A touchscreen is an input device – and it does not perform computations, but simply relays input signals.

It is wholly without merit to suggest that a touchscreen *input* device can be used as the computing device of Sitrack. That suggests a fundamental misunderstanding by Petitioner of the technology underlying both Sitrack and Levoy, and indeed the ‘591 patent. A processor is not a display device, and a display device is not a processor.

Finally, that a user in Levoy uses a touchscreen to edit pictures does not imply that an apparatus can *extract* at least one pixel from the user's input in the touchscreen device, as required by claim 4. As more fully discussed above, neither Sitrick nor Levoy discloses an extracting operation.

Therefore, claim 4 is not rendered obvious by Sitrick in view of Levoy.

Petitioner fails to carry its burden of establishing a likelihood of unpatentability. *Inter partes* review should not be instituted.

V. CONCLUSION

For the reasons set forth above, Petitioner has failed to carry its burden of establishing a reasonable likelihood of prevailing on any proposed ground of unpatentability. Accordingly, institution of *inter partes* review should be denied.

Respectfully submitted,

Date: July 25, 2017

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**CERTIFICATE OF SERVICE
UNDER 37 C.F.R. § 42.6(e)**

Pursuant to 37 C.F.R. §§ 42.6(e), I certify that I caused to be served electronically by agreement of the parties on this 25th day of July 2017, a true and correct copy of the foregoing Corrected Preliminary Response by Patent Owner, on counsel of record for Petitioner as follows:

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