

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

HANSHOW AMERICA INC. and HANSHOW TECHNOLOGY CO., LTD.
Petitioner,

v.

SES-IMAGOTAG GMBH,
Patent Owner.

Case No. IPR2024-00188
U.S. Patent No. 11,405,669

PATENT OWNER'S RESPONSE

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EXHIBIT LIST

Exhibit	Reference
2001	Andrew S. Tanenbaum & David J. Wetherall, Computer Networks (Prentice Hall, 5th ed. 2011)
2002	Deposition transcript of Dr. Emmanouil M. Tentzeris, dated August 16, 2024
2003	Unicast UDP Usage Guidelines for Application Designers, RFC 5405, Networking Working Group ("RFC 5405")
2004	Declaration of John Hart, Ph.D., in Support of Patent Owner's Response
2005	Curriculum Vitae of John Hart, Ph.D.

LISTING OF CHALLENGED CLAIMS

Reference	Claim limitation
[1.0]	A video playback system (1), comprising
[1.1]	a number of playback devices (6A, 6B) to playback a video on their screens (5),
[1.2]	each playback device (6A, 6B) comprises a memory to store video data (9) representing said video,
[1.3a]	and a communication stage to communicate data with each other, wherein the devices (6A, 6B) are designed:
[1.3b]	to transmit video playback progress-data via the communication stage to the other device (6B, 6A); and,
[1.3c]	to determine based on the received progress data whether it is in a synchronous or asynchronous playback progress with the other devices (6B, 6A);
[1.4]	wherein the display devices (6A, 6B) are designed to display product information or product price related information by means of virtual electronic shelf labels displayed within a section of a screen's (5) display area overlapping with a video content or substituting a video content of said section.
[2.0]	The system (I) ¹ according to claim 1,
[2.1]	comprising a video distribution server (7) for distribution of the video data (9) to the devices (6A, 6B), in particular the entire video data (9) of a video upfront to playback start at the devices (6A, 6B).
[3.0]	The system (1) according to claim 1,
[3.1]	wherein the devices (6A, 6B) are designed to determine independently from a video distribution server (7) which distributed the video data (9) to the devices (6A, 6B) that they are in a synchronous or asynchronous playback progress.
[4.0]	The system (1) according to claim 1,

¹ Patent Owner notes this dependently-claimed element reflects a typographical error in the patent language; the “system (I)” identified by Roman numeral refers to the same “system (1)” identified by Western Arabic numeral in independent claim limitation [1.0].

[4.1]	wherein the devices (6A, 6B) are designed: to playback compressed video data (9) that are structured in frames labeled by frame numbers, and to utilize a frame number that labels the frame that is currently played back as the progress-data to be transmitted.
[5.0]	The system (I) ² according to claim 4,
[5.1]	wherein each device (6A, 6B) is designed to compare a frame number received with a frame number of the frame currently played back at the device (6A, 6B) and to determine an asynchronous playback progress if the difference in the frame numbers compared with each other exceeds a pre-determined threshold value.
[6.0]	The system (1) according to claim 1,
[6.1]	wherein each device (6A, 6B) is designed to repeatedly transmit the progress-data, preferred in a periodic manner, more preferred every second.
[7.0]	The system (1) according to claim 1,
[7.1]	wherein each device is designed to broadcast adjustment data for adjusting the playback progress of the devices (6A, 6B) over its communication stage if it detects an asynchronous playback progress.
[8.0]	The system (1) according to claim 7,
[8.1]	wherein each device (6A, 6B) is designed to embed the adjustment data in a synchronization command.
[9.0]	The system (1) according to claim 8,
[9.1]	wherein each device (6A, 6B) is designed to receive the adjustment data and to adjust its playback progress according to the adjustment data, in particular to continue its playback of compressed video data that are structured in frames labeled by frame numbers with the frame number received in the broadcast of the adjustment data.
[10.0]	The system (1) according to claim 7,
[10.1]	wherein each device (6A, 6B) is designed: to receive the adjustment data; and to adjust its playback progress according to the adjustment data, in particular to continue its playback of compressed video data that are structured in frames labeled by frame numbers with the frame number received in the broadcast of the adjustment data.
[11.0]	The system (1) according to claim 1,

² See *supra* note 1.

[11.1]	wherein the communication stage is designed to use UDP multicast data packets for the communication.
[12.0]	The system (1) according to claim 1,
[12.1]	wherein each display device (6A, 6B): comprises its screen (5) or a number of screens (5), or is connected to its external screen (5) or a number of screens (5) to be controlled by it.
[13.0]	The system (1) according to claim 1,
[13.1]	wherein said screen (5) is designed to realize a shelf rail (4) or part of it, or to cover a front of a shelf rail (4) or a part of it to which it is attachable.
[14.0]	The system (1) according to claim 1,
[14.1]	wherein the system realizes a video playback enabled electronic shelf label system.
[15.0]	A use of the system (1) according to claim 1 as video playback enabled electronic shelf label system for the playback of synchronized video content for a number of shelf rails (4),
[15.1]	wherein each of said shelves rails (4) is realized by a screen (5) or carries a screen (5).

I. INTRODUCTION

Petitioner challenges the patentability of claims 1-15 (of which only claim 1 is independent) of U.S. Patent No. 11,405,669 (Ex-1001, “the ’669 Patent”). Petitioner asserts two grounds: (1) Swafford and Masumoto; and (2) Masumoto, Kipp, and Takashi. Petitioner has failed to demonstrate that the challenged claims are obvious for several reasons.

For both Grounds 1 and 2, Petitioner relies on a primary reference—Masumoto—that works in a way entirely contrary to the claims of the ’669 Patent. The ’669 Patent describes a system in which *each* playback device is designed to do two things while the system is in operation: (1) transmit playback progress-data to all of the other playback devices; and (2) based on the playback progress-data received from the other devices, determine whether it is synchronized with the other devices. In the system of the ’669 Patent, each playback device is a peer to every other playback device, having reciprocal, bilateral communication with each and every one of the devices—each device transmits its data to all other devices, receives data from all other devices, and then using the data it receives from the other devices, independently determines whether it is synchronized with the other devices.

Masumoto, by contrast, discloses a classic hub-and-spoke system. In the Masumoto system a single “master display” controls the playback for all of the other non-master displays. In the system as disclosed in Masumoto, the playback devices

are not peers with each other, receiving data from the others and independently determining whether they are synchronized. Instead, the master display receives data, makes a determination regarding synchronization, and then instructs the other playback devices on how to synchronize. Masumoto, thus, teaches a unilateral system where communication flows to and from a master display, in contrast to the peer-to-peer type system disclosed in the '669 Patent. This fundamental disconnect infects both Grounds 1 and 2, and by itself, shows none of the challenged claims have been shown to be unpatentable.

But that is not the only significant problem for Grounds 1 and 2. For instance, for Ground 1, Petitioner fails to show that a POSITA would have been motivated to combine Masumoto with Swafford, and Petitioner cannot show that the additional limitations of dependent claims 7 and 11 are met.

For its part, Ground 2 is flawed beyond Petitioner's erroneous reliance on Masumoto. For this ground, Petitioner misinterprets the disclosure of its secondary reference, Takashi. Takashi discloses a three-dimensional representation of a product—not a display like that at issue in the '669 Patent. That three-dimensional representation is not disclosed as extending over the housing at the base of the apparatus where pricing and other product information can be found. As a result, even if Takashi disclosed a display in the sense of the '669 Patent (it does not), it still would not disclose the “overlap” requirement of limitation [1.4]. And anyway, to even

attempt to cobble together disclosures sufficient to reach the '669 Patent's limitations, Petitioner combines two different embodiments of Takashi and yet entirely fails to explain why or how a POSITA would make such a combination. Petitioner's combination is, thus, little more than hindsight.

Finally, Petitioner's arguments purport to be supported by the testimony of its expert, Dr. Tentzeris. But Dr. Tentzeris—who admits to having, at best, nominal experience in the specific subject matter of the '669 Patent—simply parrots the opinions of the attorneys, and his deposition testimony showed that those adopted opinions are contrary to the understanding of a POSITA.

Given the manifest gaps in the Petition, the Board should find Petitioner has not met its burden to show that any challenged claim is unpatentable.

II. BACKGROUND

A. Overview of the Technology

In traditional brick-and-mortar retail, products are displayed on shelves, and paper or sticker labels are placed on the shelf's "rail"—the consumer-facing part of the shelf—to identify product name, quantity, or price. But as low-powered microelectronics have become more common, stores have begun transitioning to electronic shelf labels ("ESLs"), or even larger digital displays installed on shelf rails, that can depict "virtual" shelf labels. Ex-1001, 1:55-60, 4:44-48. Unlike paper or sticker labels, ESLs and larger displays (which the '669 Patent collectively calls "display

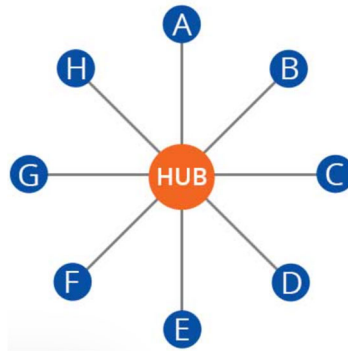
devices” or “playback devices”) can present dynamic video and images. These display devices can be configured so that multiple display devices can show one image or video extended (i.e., stretched) across multiple display devices. An example of video extended across four different displays is provided below.



Extended Video

Ex-2004 (“Hart”), ¶¶21-23. But extending the video or image on multiple display devices requires that the devices be “synchronized” so that they all show their respective part of a video or image at the same time. *Id.*

One known method to synchronize displays is through a hub-and-spoke model. In such systems, a central server is the “hub” that communicates to the displays, which are the spokes, to ensure synchronization.



Hart, ¶24. But hub-and-spoke systems require expensive implementation hardware, have high bandwidth requirements, and rely on precise server-synchronized clock signals to ensure the server-streamed video buffers correctly. Ex-1001, 1:20-36; Hart, ¶¶24-25.

B. Overview of the '669 Patent

The '669 Patent approached the problem of synchronizing multiple display devices differently than the prior art. Rather than have all of the display devices communicate with a hub that would control timing, the '669 Patent discloses and claims a system where the display devices communicate directly with one another, and each device independently determines its own timing. Ex-1001, 1:44-60, 1:66-2:11; Hart, ¶26.

Videos are just a series of pictures (often called “frames”) played in rapid succession. Hart, ¶¶26-28. The '669 Patent discloses that a video can be downloaded from a central server (7). Once downloaded and playing, each of the display devices (6A, 6B) checks which frame number it is displaying at a set interval (e.g., one

second). Each device then broadcasts its frame number to the other display devices.
Id., ¶¶28-32. This “playback progress-data” is used by each device to determine whether it is synchronized with the other displays. Ex-1001, 5:49-55; Hart, ¶28.

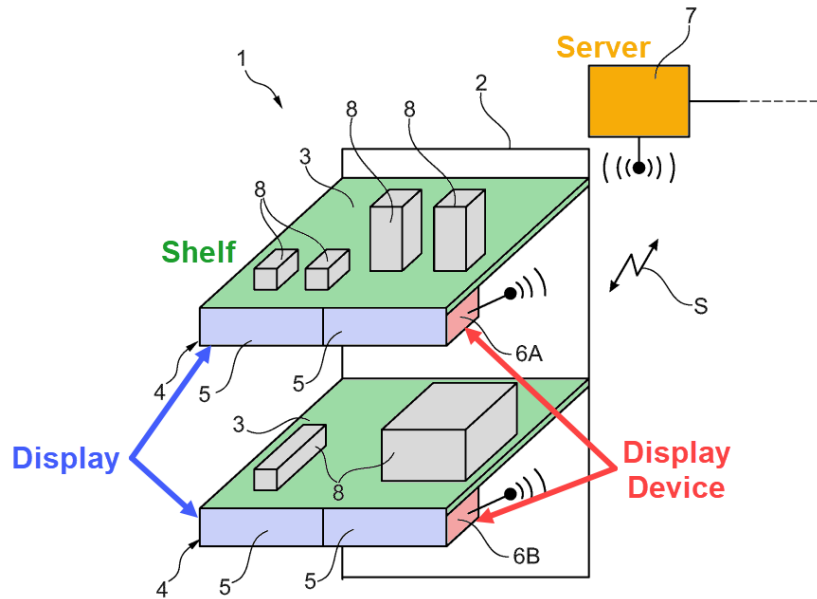


Fig. 1

Ex-1001, Figure 1 (annotated)

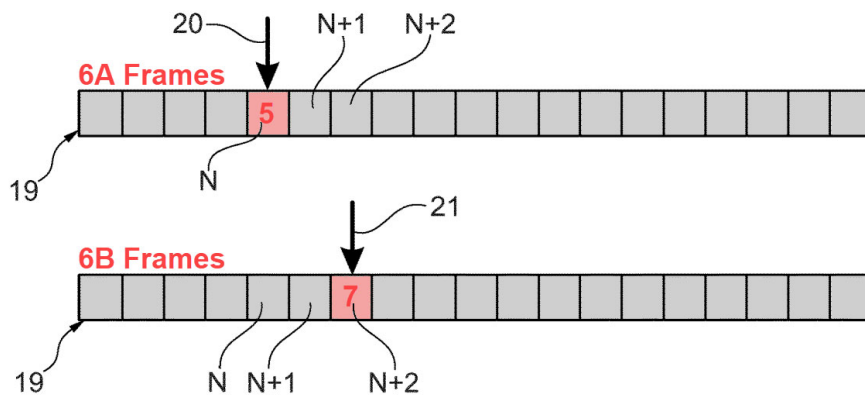


Fig. 4

Ex-1001, Figure 4 (annotated)

Figure 4 shows an example of this. As shown in Figure 4, after one second of playback, display device 6A informs display device 6B that it (6A) is on frame 5 of the video, and 6B informs 6A that it (6B) is on frame 7. Hart, ¶29. Each display device compares the received frame number to its own frame number at the given interval. Ex-1001, 5:56-58; Hart, ¶29. If the received frame number and a display device's own frame number differ by two or more frames, then the display device first recognizing the asynchronization broadcasts a command for nearby display devices to resynchronize by jumping ahead to match the higher frame number. Ex-1001, 5:59-65; Hart, ¶29. In the example of Figure 4, if 6B (which is at frame 7) discovers the asynchronization first, it instructs 6A to jump to frame 7 to resynchronize. Hart, ¶29.

In the configuration described in the '669 Patent, no device is the "hub" (sometimes referred to as a "master"), and *each* device is responsible for *both* transmitting its playback progress-data to the other displays and determining whether it is synchronized with the other devices. Hart, ¶33. This topology resembles what a POSITA would have understood to be a peer-to-peer network. *Id.* Peer-to-peer networks consist of a plurality of devices, each communicating directly with each other, eliminating the need for a central "hub" or "master." *Id.*

C. Prosecution History of the '669 Patent

The '669 Patent was filed as Application No. 16/762,709 ("709 Application") on May 8, 2020, and claims priority to PCT/EP2017/078844 filed on November 10, 2017. Ex-1001, Cover; Hart, ¶¶34-52.

During prosecution, the Examiner initially rejected the pending claims in view of Asami (EP2461582). Ex-1002, 145-54. In response, the Applicant did not amend the claims, *id.*, 136-44, but instead argued that Asami did not teach the claims because each of the claimed display devices "*communicate data with each other ... to determine, based on the received progress data, whether it is in a synchronous or asynchronous playback progress with the other devices (emphasis added).*" *Id.*, 140-41. The Applicant focused on the fact that the claims recite that the playback devices communicate "with each other" and required "a *bidirectional* relationship" in which each display device engaged in "*reciprocal*" exchanges of information for each to independently determine synchronicity. *Id.*, 141. According to the Applicant, Asami did not disclose such a relationship because only one of Asami's devices engaged only in a *unidirectional* exchange of information in which only one device would determine whether a plurality of display devices was synchronized. *Id.* at 141-43.

The Examiner considered the Applicant's arguments "persuasive," but entered a new ground of rejection in view of Asami and Oh (US2017/0098431), relying on Oh's teachings of determining synchronicity between devices. *Id.*, 114-17. In

response, the Applicant re-presented the originally filed claims, but added a new claim that effectively combined the limitations of then-pending claim 1 and one of its dependent claims directed to a display device that could also display a virtual ESL in addition to a video. *Id.*, 108. The Applicant then reiterated the same distinction between bidirectional (i.e., reciprocal) and unidirectional communication between display devices as a basis for patentability. *Id.*, 109-10.

The Examiner then issued a Final Office Action that found the newly added claim allowable but rejected all others. *Id.*, 61-72. In doing so, the Examiner disagreed with the Applicant's "argu[ment] that Asami only teaches ... unidirectional communication from the management device to the playback devices 10," but instead suggested bidirectional communication by teaching a separate "cascade mode." *Id.*, 63. The Examiner never reconciled that Asami taught only a single device capable of making synchronization determinations. Hart, ¶49.

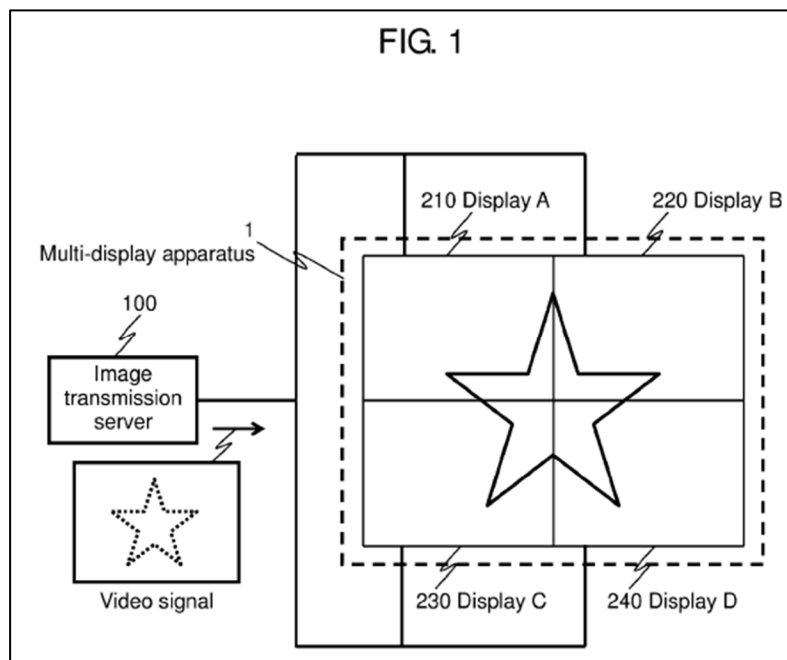
Solely to "advance prosecution," the Applicant filed an after-final amendment that cancelled the two claims that were combined to create the now-allowable independent claim, and made all other claims depend directly or indirectly from that allowable claim. Ex-1002, 55-59. The Examiner then allowed the patent to issue, stating that the point of novelty (according to the Examiner) was combining the synchronicity determination with the ability to display a virtual ESL overlapping the video content being displayed. *Id.*, 12-16; Hart, ¶51.

D. Asserted Prior Art References

1. Masumoto (Ex-1005)

Masumoto is a U.S. Patent Application that was filed on October 11, 2016, and published on May 11, 2017.

Masumoto concerns the synchronization of large displays “for displaying a single image.” Ex-1005, Abstract; Hart, ¶¶96-105. Masumoto is not concerned with small ESL-type displays, but rather, large displays one might see at a trade show or the like. Masumoto discloses an image transmission server (100) to transmit a video signal to a plurality of displays (210-240). Hart, ¶96. Each display “cuts out and displays a portion...from the received image” sent to all four displays. Ex-1005, Fig. 1 (below), [0039].



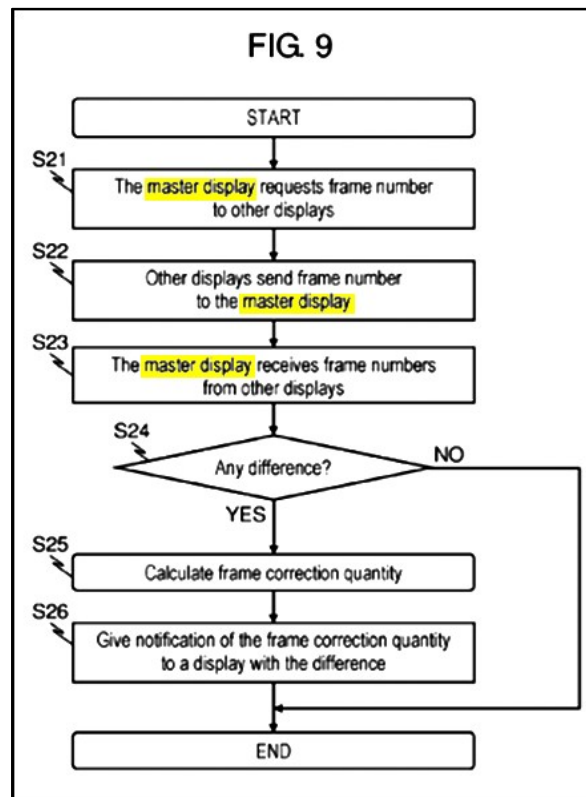
Ex-1005, Figure 1.

Because Masumoto's apparatus displays one image using multiple displays, it must "match ... image display timings and image display positions of the entire image by connecting an image transmission server and multiple displays to a network." *Id.*, [0015]. Coordinating the timing requires the displays to communicate "specific information" including time stamp and frame at that time to a "controller" (214) of a separate display. *Id.*, [0017], [0107]-[0108].

Unlike the '669 Patent, in the system disclosed by Masumoto, displays do not exchange playback progress-data *with each other*. Hart, ¶¶97-98. Instead, Masumoto discloses a single "master display" that requests timing information from all other displays, with the other displays sending their timing information only to the master—not to all of the other displays as in the '669 Patent. Ex-1005, [0108]. While Masumoto says that the display may have similar configurations and that any one of the displays may be the master, Masumoto discloses that there can only be a single master display at any given time, *id.*, [0124] ("only one master display can be set in multi-display apparatus 1"), and it is established either at installation or when the system is powered on by measuring which display has the "highest processing capability" (e.g., CPU load rate). Ex-1005, [0120]-[0121], [0124]. The system disclosed in Masumoto even includes rules to break a potential tie (i.e., two devices with the same processing capability), thereby eliminating any possibility of designating more than one master display. *Id.*, [0124]. In Masumoto's system, only the master display

system determines synchronization—it “match[es] display timings of all [non-master] displays at a desired original timing of the video signal [from the master display], without adjusting the displays to a display with the slowest display timing.” *Id.*, [0126].

Because the master display controls the timing of the other displays, frame information flows only in one direction—to the master display. Hart, ¶105. As depicted in Figure 9 (below), the designated master display makes a request for frame numbers from the other displays (step S21), each of which sends that information to the master display (step S22). *Id.* The master display—and only the master display—uses the frame information received from the other displays to calculate whether to send a correction to the sending display (step S24-S26). Ex-1005, Fig. 9 (below), [0108]-[0119].

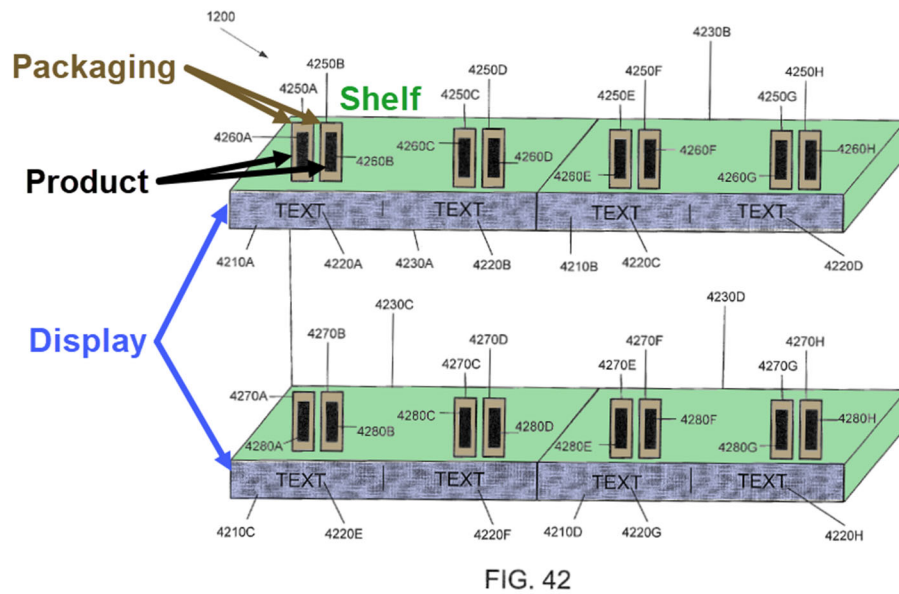


Ex-1005, Figure 9 (annotated).

2. Swafford (Ex-1004)

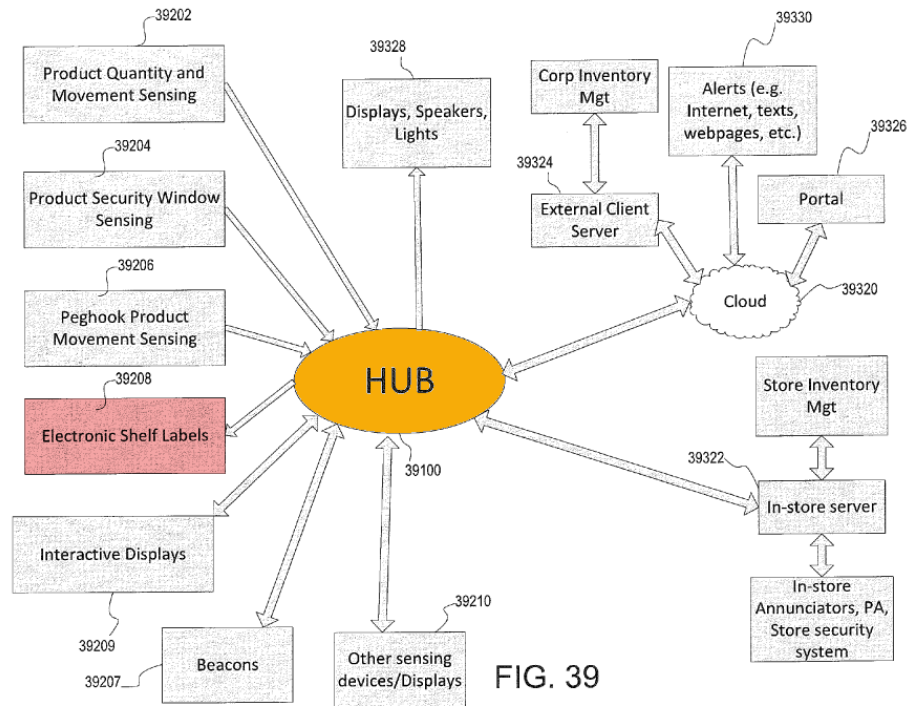
Swafford is a U.S. Patent Application that was filed on May 15, 2015, and published on May 12, 2016.

Unlike Masumoto, Swafford is directed to video “apportioned among displays on electronic label devices and the packages,” which “simultaneously output a different portion of the streaming video.” Ex-1004, Abstract. An example of Swafford’s system is shown in Figure 42 (annotated below). Hart, ¶106.



Ex-1004, Figure 42 (annotated).

As shown, displays (4210A-H) are affixed to shelves for packaged products (4260A-H, 4280A-H, 4250A-H, 4270A-H) to show product information (text 4220A-D). Hart, ¶107. Information is communicated to displays (4210A-H) using the “network and hub” architecture of Figure 39 (reproduced below) (Ex-1004, Fig. 39, [0382]). As shown in Figure 39 (below), the hub communicates data to the end-point devices. *Id.*, [0350]. Swafford does not disclose *any* communication—let alone bidirectional/reciprocal communication—between the end-point devices. Hart, ¶108. Nor does Swafford disclose any particular synchronization system. *Id.*



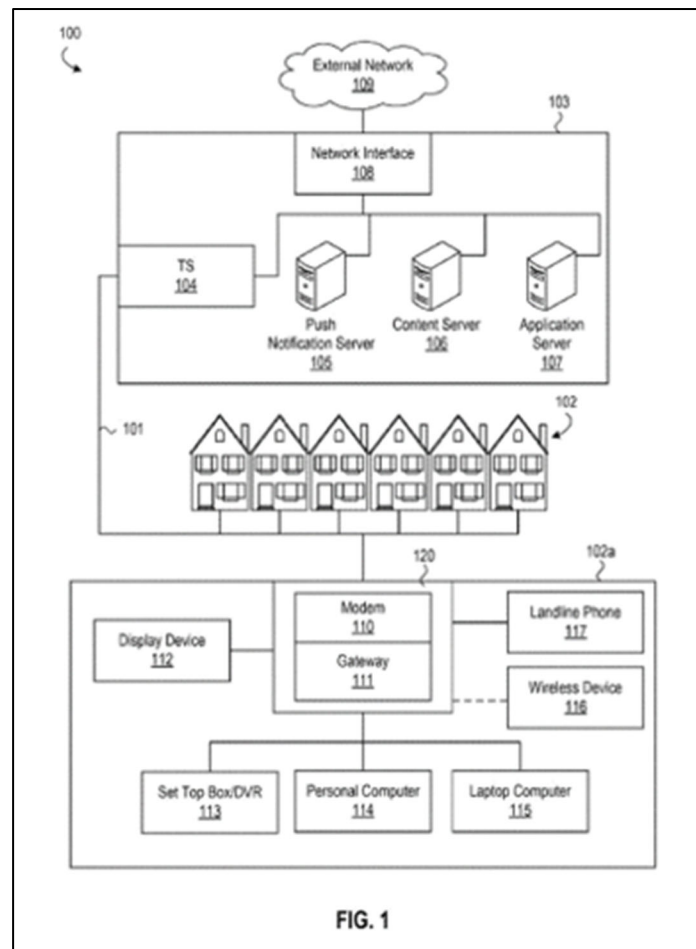
Ex-1004, Figure 39 (annotated).

3. Kipp (Ex-1006)

Kipp (Ground 2 only) is a U.S. Patent Application that was filed on December 9, 2015, and published on June 15, 2017.

Kipp discloses a system for synchronizing playback of “segmented video content across multiple video playback devices.” Ex-1006, Abstract; *see also* Hart, ¶109. Kipp is directed to the problem that “[p]layback devices may connect to an IP video server at slightly different times and thus receive the portions of video content at different times,” resulting in playback that is “out of sync” when that video content is intended to be played back “in real time” from a “stream.” Ex-1006, [0002]. As depicted in Figure 1 (below), Kipp discloses a system directed to ensuring that the

same video plays at the same time in multiple locations—such as in “sports bars, classrooms, meeting rooms ... hotels, apartment buildings, [and] residences.” *Id.*, [0036]. This is a different problem than that addressed by the '669 Patent where the concern is how to display portions of an image on different displays. Hart, ¶109. It is undisputed that Kipp does not disclose extending video across multiple displays where each display shows only a portion of the video as in the '669 Patent. *Id.*

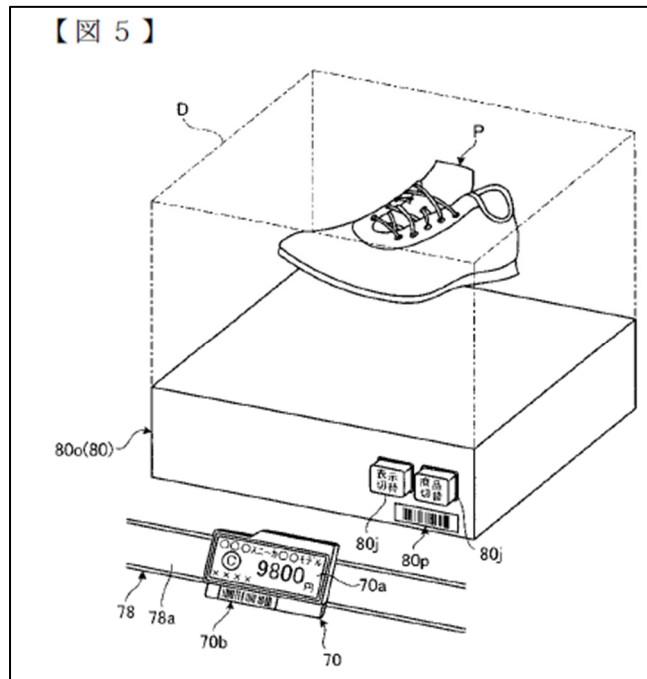


Ex-1006, Figure 1.

4. Takashi (Ex-1007 (Original), Ex-1008 (Translation))

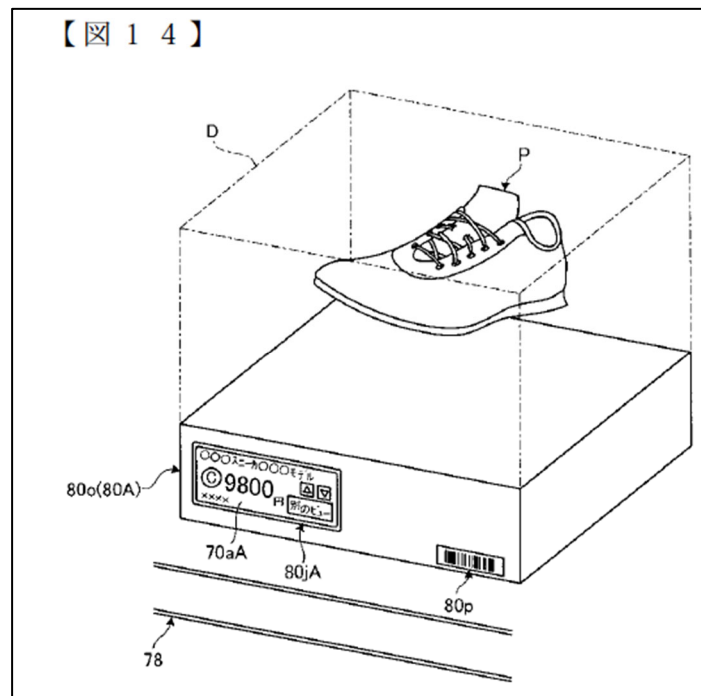
Takashi is a Japanese Patent Application that was filed on September 29, 2009, and published on April 24, 2011.

Takashi discloses a “merchandise information display system.” Ex-1008, Abstract; *see also* Hart, ¶¶185-86. The system includes an image display terminal (80) with display area (D) for displaying merchandise. Ex-1008, [0020]. That display area can either be a three-dimensional display, or a set of two-dimensional displays, such as showing different perspectives of the merchandise on different sides. The display area (D) sits on a housing (80o, which is also part of image display terminal 80). The image—a shoe for example—is shown above a separate shelf tag terminal (70) affixed to a shelf (78) for displaying the name and price information of the merchandise. *Id.*, [0019]-[0020]. This system is shown in Figure 5 (below). Ex-1007, Fig. 5 (original Japanese application document); Ex-1008, [0019]-[0020] (English translation).



Ex-1007, Figure 5.

Takashi also discloses a different embodiment, where the “text information about the merchandise” is shown on a display portion (70a) mounted on the housing (80o). Ex-1007, [0051], Fig. 14 (below).



Ex-1007, Figure 14.

III. PERSON OF ORDINARY SKILL IN THE ART

Patent Owner disagrees with Petitioner's proposed level of ordinary skill in the art. Hart, ¶¶53-55. First, the fields of computer engineering and electrical engineering are too broad to require the specific knowledge to understand and practice the '669 Patent. *Id.*, ¶55. Second, "wireless telecommunication systems" should not be included, as the '669 Patent does not address wireless telecommunication systems of any sort. *Id.*, ¶¶56-58. As such, Patent Owner proposes that the proper level of ordinary skill in the art would be someone with coursework or training in multimedia systems and at least a Master of Science Degree in an academic area emphasizing electrical engineering, computer engineering, computer science, or an equivalent

field (or a similar technical Master's Degree, or higher degree). Hart, ¶56. Alternatively, a POSITA would have had coursework in multimedia systems and a Bachelor's Degree (or higher degree) in an academic area emphasizing electrical engineering, computer engineering, computer science, or an equivalent field with two or more years of work experience in multimedia systems. *Id.* Additional education in a relevant field, or relevant industry experience may compensate for a deficit in one of the other aspects of the requirements stated above. *Id.*

While Petitioner's expert, Dr. Tentzeris, may meet the specific definition of a POSITA, he is not an expert in the relevant subject matter of the '669 Patent. This is so because Dr. Tentzeris's experience concerns "antennas, fractal RF structures and circuit design....," Ex-1003, ¶2, whereas the subject matter of the '669 Patent is directed to a "higher level" of the network-communications stack, Hart, ¶59.

Network communications are often described using a model (called the "OSI" model) comprising various layers. *Id.*, ¶60. At the base of the model is the "physical layer," which is responsible for the transmission and reception of raw data. *Id.* That is where Dr. Tentzeris's expertise is. Above the "physical layer," rest six other layers (i.e., data link, network, transport, session, presentation, and application) that work together to transmit and convert the raw data into user-facing information. *Id.* The subject matter of the '669 Patent relates to the layers above the physical layer. *Id.*,

¶61. In particular, the '669 Patent concerns the display of video content, which is handled in the application layer, not the physical layer. *Id.*; Ex-2001, 697-720.

Dr. Tentzeris conceded that his experience with these higher levels of the OSI model is exceedingly limited. Tentzeris Dep., 69:6-70:5 (“I am familiar, but not extremely clear.” “So you have different constraints if you have audio then having multimedia transmission. So the meaning whether there’s such a variety of potential applications that I may not be familiar with some of them.”), 60:13-17; Hart, ¶62. The Board has found that in such circumstances—when a proffered expert has little relevant expertise—the Board should give limited weight to the expert’s testimony. *See Google LLC et al. v. Ecofactor, Inc.*, IPR2020-01504, Paper 55, at 20, 23 (Aug. 1, 2024) (“[I]f an expert witness’s background does not demonstrate that they have specific experience on a topic to give reliable testimony on that topic and the witness’s testimony is not corroborated by other evidence, [the Board] may decline to give it any weight or limit the weight [the Board] do[es] give it,” explaining that although the expert satisfied the definition of a POSITA, the lack of relevant experience counseled against giving the expert’s testimony “any weight”). As such, Dr. Tentzeris’s opinion on issues such as motivation to combine, claim construction, and whether any reference meets any claim limitation should be given little, if any, weight. Hart, ¶63.

IV. CLAIM CONSTRUCTION

The Board raised two potential claim-construction issues in its Institution Decision, which Patent Owner addresses here.

A. “Designed to”

The Board suggested that “[t]he parties may wish to address whether the proper scope of [claim 1] does not require either transmission or determination but rather requires that the playback devices be designed to transmit and determine.” Paper 11, 13 (emphasis in original). To the extent that the Board is asking whether mere capability of the playback devices to transmit and determine is sufficient to meet the claims, it is not. Instead, the Federal Circuit, as well as both the plain language of the claims and the file history, make it clear that the claims require more, namely that each device be expressly configured to transmit and determine during the operation of the system. *Hart*, ¶¶64-66.

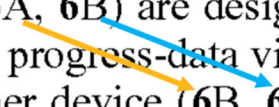
While the Federal Circuit has not (to Patent Owner's knowledge) explicitly construed “designed to,” it has addressed similar terms, and in each case concluded that they require more than mere capability. For example, in *In re Man Mach. Interface Techs. LLC*, 822 F.3d 1282, 1286 (Fed. Cir. 2016), the Federal Circuit equated “adapted to” with “designed to” and found that the term had a narrow meaning. As the Federal Circuit put it, “adapted to” meant “that the claimed remote control device is made or designed to be held in the human hand and the thumb switch is made or

designed for activation by a human thumb.” This is distinct from, for example, being capable of operation with the human thumb. Similarly, in *In re Giannelli*, 739 F.3d 1375, 1379 (Fed. Cir. 2014), the court considered the phrase “adapted to be moved...by a pulling force...in a rowing motion.” The court concluded that the phrase “has a narrower meaning, viz., that the claimed machine is designed or constructed to be used as a rowing machine whereby a pulling force is exerted on the handles.” *Id.* Again, the court equated “adapted to” with “designed or constructed to” and found that mere capability was not enough to reach the limitation. *See also Aspex Eyewear, Inc. v. Marchon Eyewear, Inc.*, 672 F.3d 1335, 1349 (Fed. Cir. 2012) (“[T]he phrase ‘adapted to’ is most naturally understood to mean that the arms and magnetic members are designed or configured to accomplish the specified objective, not simply that they can be made to serve that purpose.”). The Federal Circuit, thus, views terms like “adapted to” and “designed to” as requiring more than mere capability to meet the relevant limitation.

That is consistent with how the claims are written, as the claim limitations require that each device be designed so that in operation each device can both transmit video playback progress-data to all other devices and determine, based on the received playback progress-data, whether it is synchronized with the other devices. Limitation [1.3a] requires the playback devices 6A and 6B “communicate data *with each other*,” and limitation [1.3b] recites that each device “transmit[s] video

playback progress-data ... to the other device (6B, 6A).” By reciting that the same device numbers communicate with each other (“devices (6A, 6B) ... transmit ... to the other device (6B, 6A)”), limitation [1.3b] requires reciprocal communication—that device 6A transmits to 6B *and* 6B transmits to 6A. Hart, ¶67.

a communication stage to communicate data with each other, wherein the devices (6A, 6B) are designed: to transmit video playback progress-data via the communication stage to the other device (6B, 6A); and,



Ex-1001, Claim 1 (annotated).

Moreover, the specification explains that each playback device (6A and 6B) is designed so that during use it transmits its own playback progress-data after a tracked lapse of its own clock. Ex-1001, 5:49-53; Hart, ¶68. This is again a reciprocal exchange of playback progress-data because the “transmission of the playback progress-data of the device 6A is received at the device 6B and *vice versa*.” Ex-1001, 5:53-55 (emphasis in original). Further, the ’669 Patent’s playback devices are designed to “independently” determine “that they are in a synchronous or asynchronous playback progress” with other playback devices. *Id.*, 2:29-33. Specifically, each playback device is “designed to compare a frame number received” from another playback device “with a frame number of the frame currently played back at the device and to determine an asynchronous playback progress if the difference in

the frame numbers compared with each other exceeds a pre-determined threshold value.” *Id.*, 2:54-59.

During prosecution, Applicant's arguments underscored the required reciprocal nature of the communication during operation between playback devices so that each device can independently make its own synchronicity determination. Hart, ¶69. The Applicant explained that playback devices communicating “with each other” involved reciprocal communication of playback progress-data ([1.3b]) and the devices subsequently compared their own playback progress to the playback progress-data of another device ([1.3c]). Ex-1002, 140-41 (arguing that “[e]ach playback device ... comprises a communication stage *to communicate data with each other*, wherein the devices are designed to transmit video playback progress data *via the communication stage to the other device* and to determine, based on the received progress data, whether it is in a synchronous or asynchronous playback progress with the other devices”) (emphasis in original); *id.*, 141 (arguing that in then-pending claim 1 “each individual playback device can independently detect an asynchronous playback progress within the group of playback devices,” which the individual playback devices achieve “by a simple and fast comparison of the playback progress of another device or of other devices with its own playback progress”).

Indeed, the Applicant expressly argued that the claim limitation “each other” described a bidirectional and reciprocal exchange. *Id.* (arguing that “[w]ith each

other' particularly describes a bidirectional relationship (*cf.* Merriam-Webster dictionary, definition for '*Each other*': '*each of two or more in reciprocal action or relation*')") (emphasis in original); *id.* (arguing that unlike the asserted prior art, then-pending claim 1 required the "playback devices [to] communicate *with each other bidirectionally*, thereby enabling *independent* detection of an asynchronous playback progress within the group of playback devices ...") (emphasis in original). The Applicant noted that the requirement of devices communicating "with each other" was to allow each device to make a "comparison of the playback progress of another device or other devices with its own playback progress." *Id.*; Hart, ¶¶70-71.

The Applicant explicitly distinguished systems where there was a "master" device that transmitted synchronization information to a set of non-master devices. Ex-1002, 141. Applicant identified such systems as "unidirectional" and expressly distinguished them from bidirectional systems like the invention. The Applicant pointed out that in master-type systems, all progress is in relation to the master device, *id.*, and unlike the claimed system, that type did not allow each device to compare playback progress with each other device. *Id.*, 141-42; Hart, ¶¶70-71.

Thus, limitations [1.3b] and [1.3c] require playback devices that are expressly configured to, during operation of the claimed system, "transmit video playback progress-data" to each other (i.e., reciprocally) and "determine based on the received progress data" (i.e., the data previously transmitted from the other device in the

reciprocal exchange) “whether it is in synchronous or asynchronous play back progress with the other devices.” Hart, ¶¶72-73. In short, merely being capable of doing these things is not sufficient to meet the limitations of the claims.

B. “Communication Stage to Communicate Data With Each Other”

The Board also identified as a potential claim-construction issue “whether ‘communication stage to communicate data with each other’ as recited in claim 1 is a means-plus-function limitation that invokes 35 U.S.C. §112 (f).” Paper 11, 11.

Neither party proposed that this is a means-plus-function limitation. Patent Owner contends that construction of this term, including whether or not 35 U.S.C. §112(f) applies is unnecessary for the resolution of this matter. *Realtime Data, LLC v. Iancu*, 912 F.3d 1368, 1375 (Fed. Cir. 2019) (“The Board is required to construe only those terms that are in controversy, and only to the extent necessary to resolve the controversy.”) (cleaned up). No construction is necessary because, regardless of whether “communication stage” is itself a structural term or in means-plus-function form, for the reasons discussed in further detail below, Petitioner fails to identify any prior art that is designed to operate as claimed. In particular, Petitioner fails to identify any reference where each playback device is designed to *both* transmit video playback progress-data through the communication stage *and* determine, based on progress-data received through the communication stage, whether it is in

synchronous or asynchronous playback progress with the transmitting playback device. Hart, ¶¶74-75.

V. GROUND 1: The Swafford/Masumoto Combination Does Not Disclose Several Limitations of the Challenged Claims

A. Claim 1 (and therefore all challenged claims)

Claim 1 is the only independent claim in the '669 Patent. Petitioner relies on Masumoto to teach limitations [1.3b] and [1.3c], Paper 2 (“Petition”), 25, and on Swafford to teach limitation [1.4], *id.*, 28. Hart, ¶¶110-111. Neither reference teaches the relevant limitations, and moreover, the Petition fails to articulate a motivation to combine these disparate references. *Id.* As such, the combination of Masumoto and Swafford is hindsight reconstruction.

1. Masumoto does not disclose limitations [1.3b] or [1.3c] because it discloses unilateral communication, not reciprocal communication

Limitation [1.3b] requires that the playback devices “transmit video playback progress-data to the other device (6B, 6A)” and [1.3c] requires that each device “determine based on the *received* progress data whether it is in a synchronous or asynchronous playback progress with the other devices (6B, 6A)” (emphasis added). These limitations require reciprocal communication between the devices—each must transmit playback progress-data to the other, and each must determine based

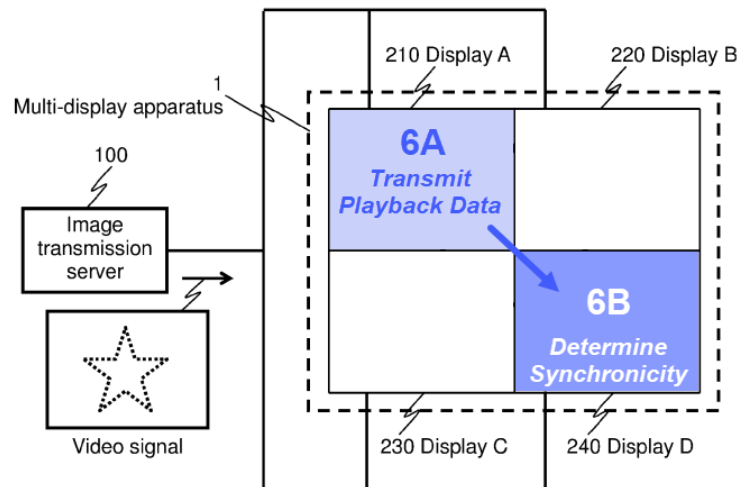
on that data, whether it is synchronous. None of the displays disclosed in Masumoto do this. Hart, ¶112.

Instead, Masumoto discloses a system that synchronizes video on multiple displays using a “master display” that “calculates a desired frame number” and notifies other non-master display devices to correct their own frame number based on the calculation.³ Ex-1005, [0110], [0113]; Hart, ¶¶112-27. Masumoto's system is designed such that the master display *receives* “specific information” from the non-master devices, but it does not *transmit* to the other displays its own playback data. Ex-1005, [0108] (“one display requests other displays to notify the frame number or time stamp of the video signal displayed on each of other displays”) (emphasis added), [0110], [0120], Fig. 9. While the non-master displays are designed to transmit their current frame number or time stamp to the master display, they are not designed to determine whether they are synchronized with the other displays using the frame number or time stamp received from another device. Hart, ¶127; Ex-1005, [0107]-[0118], Fig. 9. Only the master display makes a synchronization determination, which it bases on information received from the non-master devices. Ex-1005, [0113]-[0118], Fig. 9. As shown in annotated Figure 1 below, Masumoto discloses

³ The Petition also refers to the master display by the “controller” of the master display. Petition, 25-26, 34.

a unidirectional transmission of playback progress-data to a master display, and a unitary determination by the non-transmitting master display of synchronicity.

FIG. 1



Ex-1005, Figure 1 (annotated)

Petitioner seems to recognize this problem because it proposes that Masumoto teaches that each playback device has the ability to serve as a master or non-master, and so, when one device is the master it can determine, and then later if it is designated a non-master, it can transmit. Petition, 15 (citing Masumoto's disclosure that "All displays have the same structure"); Tentzeris Dep., 124:4-5 (asserting that the master display could change). But this misses the point for two reasons. Hart, ¶128.

First, only a single master display is designated at a time, and the claims require that each playback device at all times be "designed to" *both* transmit *and* determine. Indeed, one of the grounds on which the Applicant distinguished the claims

over the prior art during prosecution was that all of the displays at any given time can (1) engage in “reciprocal” communication, Ex-1002, 141 (arguing that unlike the asserted prior art, then-pending claim 1 required the “playback devices [to] communicate *with each other bidirectionally*, thereby enabling *independent* detection of an asynchronous playback progress within the group of playback devices ...”) (emphasis in original)), and (2) make determinations about whether they are synchronized, *id.*

Second, the master-display assignment occurs only once—either at installation or when the system is powered on—and there is no disclosure of the master display being reassigned during operation or on the fly. Ex-1005, [0121], [0076]. To assign a master display, Masumoto explains that “display A210 to display D240 determines itself to be a mas[t]er display *if the measurement result of its own processing capacity is the highest, and not a master display if not the highest.*” *Id.*, [0124] (emphasis added). Masumoto also discloses that during the assignment process, if the system fails to assign a master display, or mistakenly assigns more than one display as the master display, the system resets the master display, to ensure that one—but only one—display is designated as the master display at any given time. *Id.*, [0125].

Petitioner claims that each of Masumoto's playback devices have the same structure—*see* Petition, 20 (arguing that “[a]ll displays have the same structure”)

and citing Ex-1005, [0040]—and so each is capable of transmitting and determining when assigned as a master. But the claims require more than mere capability—they require each device to transmit and determine at any given time. In Masumoto, “only one master display can be set...,” based on measuring which display has the “highest processing capability” (e.g., CPU load rate), or simply which display was turned on first. Ex-1005, [0120]-[0121], [0124]; Hart, ¶¶129-31. This configuration, therefore, precludes any playback device from *both* transmitting *and* determining as there can only be one master display at a time. For Masumoto to be similar to the system recited, all of the displays would have to be both master and non-master at the same time—something manifestly not disclosed by Masumoto. Hart, ¶¶129-31.

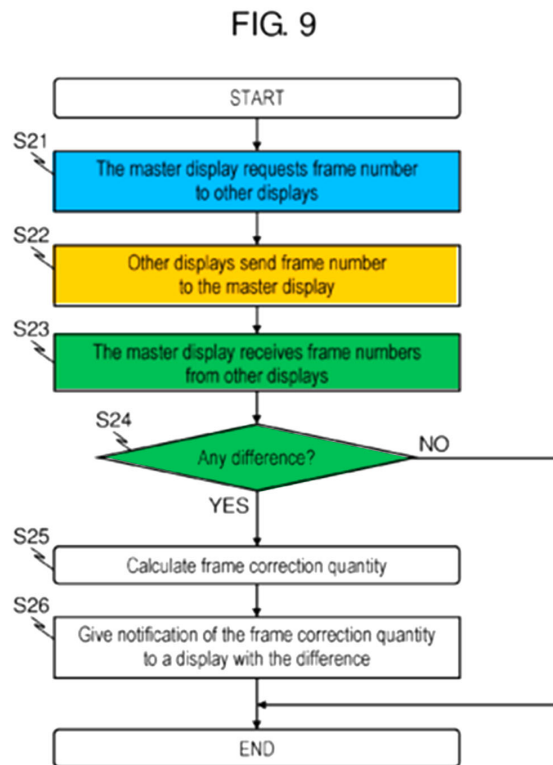
2. Masumoto does not disclose limitation [1.3c] because Masumoto's master display is not designed to determine based on the received progress data whether it is in a synchronous or asynchronous playback progress with other devices

Limitation [1.3c] requires that each playback device is designed to “determine based on the received progress data whether *it* is in a synchronous or asynchronous playback progress with the other devices.” Ex-1001, Claim 1 (emphasis added). This limitation reflects the reciprocal nature of the communications and synchronization determination required by the claims because each display must determine whether it is in sync. Hart, ¶¶132-44. Masumoto's master display does not do this. *Id.*, ¶¶145-48.

Masumoto's master display "calculates a desired frame number at [a] specific time" and "compares its calculation result with the frame number received" from other displays. Ex-1005, [0113], Fig. 9 (Step S23); *see also id.*, [0114]-[0116], [0117] ("When a frame number different from the desired frame number (difference exists) is detected (Yes in Step S24), display D240 calculates a frame correction quantity (Step S25)."), [0118]. But this is not a determination about whether the master display *itself* is in synchronous or asynchronous playback progress with the non-master displays. Hart, ¶147. Instead, Masumoto's master display determines whether the data received from the non-master displays is synchronous or asynchronous with a "calculated"/"desired" frame number. *Id.*, ¶147. That is not the same thing as determining whether the master display *itself* is synchronous or asynchronous with the other device. *Id.* In Masumoto's system, the master display is always considered correct (it is never out of sync), and it only calculates whether the other device is out of sync with it. *Id.*

Masumoto does not disclose limitation [1.3c] because the non-master displays cannot determine whether they are synchronized. *Id.*, ¶¶ 150-51. Limitation [1.3c] requires that each playback device is designed to "determine based on the received progress data whether it is in a synchronous or asynchronous playback progress with the other devices." But none of Masumoto's non-master displays either receive any progress data from anywhere or determine whether they are in a synchronous or

asynchronous playback progress with other devices. Ex-1005, [0113]-[0117], [0120], Fig. 9; Hart, ¶¶149-50. This process is illustrated in annotated Figure 9 below. In Step S21 (blue), the master display requests that the non-master displays send their current frame numbers, which they do in Step S22 (orange). *Id.*, ¶¶135, 138. Then in Steps S23 and S24 (green), it is the master display that makes the synchronization determination. *Id.*



Ex-1005, Figure 9 (annotated).

Thus, the non-master displays cannot determine based on received frame numbers whether they are in synchronous or asynchronous playback progress

because they never receive progress data from the other devices, including the master display. *See* Ex-1005, [0110], [0113], [0117]-[0118], Fig. 9; Hart, ¶¶151-53.

3. Swafford does not disclose limitation [1.4]

Element 1.4 recites that the shelf labels include a section where video content “overlaps.” This was one of the limitations on which the Examiner focused in allowing the claims. Ex-1002, 15. Yet, Petitioner relies only on a misunderstanding of inherency in trying to show how Swafford discloses it. Petition, 28-29. Instead of articulating any particular reason for believing that Swafford discloses this requirement, Petitioner broadly states that Swafford *might* provide overlapping information—or as Petitioner puts it, “static information about Product 1 or Product 2 ... *may* overlap with a streaming video as a background,” *id.* (emphasis added). But the limitation is not about whether information *might*, in theory, overlap; it requires that it *does* overlap, and Petitioner offers nothing to show that Swafford discloses any such thing. Hart, ¶154.

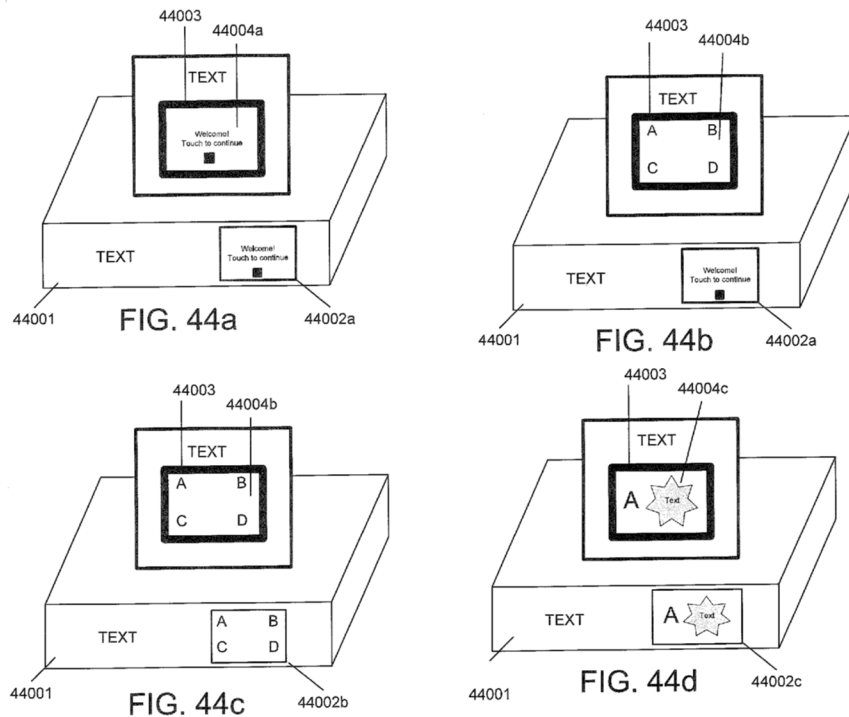
Petitioner says that overlap is “inherent” because “[t]he dynamic advertisement 43004 may inherently include same content as the streaming video displayed in the backgrounds of displays 43002 and 43003 by virtue of ‘advertisement.’” Petition, 29. But inherency requires that the characteristic be inevitably present—not that it merely be potentially present. *See In re Montgomery*, 677 F.3d 1375, 1381

(Fed. Cir. 2012) (holding that a characteristic is “only inherent if it inevitably flows from the prior art disclosure”). Indeed, to say that something *may* be present is by definition an admission that it is *not* inherent since for inherency “the limitation at issue necessarily must be present, or the natural result of the combination of elements explicitly disclosed by the prior art.” *PAR Pharm., Inc. v. TWI Pharms., Inc.*, 773 F.3d 1186, 1194-96 (Fed. Cir. 2014). Simply put, inherency “may not be established by probabilities or possibilities.” *Id.*; see also *Novartis Gene Therapies et al. v. Genzyme Corp.*, IPR2023-00609, Paper 22 at 21-22 (Aug. 30, 2023) (declining to “support a finding of inherency” because Petitioner did not produce any sufficient evidence to show that the claimed aspects would have “necessarily and inevitably result[ed]” from the combinations of the prior art). But possibilities are all Petitioner has. Hart, ¶155. And while Dr. Tentzeris’s declaration purports to support Petitioner’s inherency argument, Ex-1003, ¶88, he also admitted that he was “not aware what the meaning of inherency” was. Tentzeris Dep., 151:16-21; Hart, ¶156.

Without overlap being either literally or inherently present, Petitioner tries to plug the hole with the knowledge of a POSITA. According to Petitioner, “a POSITA would understand that designing substitutive video contents in overlapping display areas is commonly used to ‘provide additional information to a customer or to attract a customer’s attention.’” Petition, 30 (citing Ex-1004, [0404]; Ex-1003, ¶89). Especially given that Dr. Tentzeris is not an expert in video, let alone advertising or retail

marketing, this boils down to a common-sense analysis. Hart, ¶¶59, 157. But the Federal Circuit is clear that “common sense” “cannot be used as a wholesale substitute for reasoned analysis and evidentiary support, especially when dealing with a limitation missing from the prior art references specified.” *Arendi S.A.R.L. v. Apple Inc.*, 832 F.3d 1355, 1362 (Fed. Cir. 2016).

And anyway, neither Swafford itself nor Dr. Tentzeris support the notion that a POSITA would fill in the gaps as the Petition supposes. Hart, ¶157. As to Swafford, the cited paragraph has nothing to do with either substituted video or overlapping display areas. Hart, ¶158. Instead, Swafford is discussing the ability for the shelf edge (44001) to work together with the product itself (44003) for the stated purpose. Ex-1004, [0404]. Indeed, Figures 44a-d, reproduced below, show that Swafford's ESLs and video content are separate and do not overlap. Hart, ¶¶158-59.



Ex-1004, Figures 44a-d.

Nor does Dr. Tentzeris meaningfully support Petitioner's attempt to fill the gap with the knowledge of a POSITA. Instead, he simply regurgitates the statements in the Petition, adding neither analysis nor expertise to what is otherwise naked attorney argument. Ex-1003, ¶89; Hart, ¶159.

Because Masumoto does not disclose elements [1.3b] or [1.3c], and Swafford does not disclose element [1.4], Petitioner fails to meet its burden of showing that Claim 1, and all dependent claims, are unpatentable by a preponderance of the evidence under Ground 1. Hart, ¶160.

B. Claims 7 (and therefore claims 8-10) and 11

1. [7.1]: Masumoto does not disclose broadcasting adjustment data

Claim 7 requires that “each device is designed to broadcast adjustment data for adjusting the playback progress of the devices (6A, 6B) over its communication stage if it detects an asynchronous playback progress.” Ex-1001, 8:51-55. The ’669 Patent describes that while each device is responsible for addressing its own asynchronous progress, it is advantageous to influence other devices as well. *Id.*, 3:14-28. To do this, each device broadcasts adjustment data when it detects an asynchronous playback progress. *Id.* In the context of the specification, a POSITA would have understood that “broadcast” is the sending of data to multiple recipients. Ex-2002, 53:14-54:10 (stating “the whole point of the broadcast term” is the transmitter not knowing how many receivers there are); Hart, ¶161.

Petitioner ignores the “broadcasting” requirement and focuses only on the fact that, according to it, Masumoto transmits adjustment data. Petition, 41-43. Masumoto does not disclose broadcasting the purported adjustment data. Hart, ¶162. Instead, Masumoto discloses sending a notification of the frame correction quantity that is calculated for, and transmitted to, a particular device. Ex-1005, [0117]-[0119], Fig. 9. A POSITA would not have understood such one-to-one communication to be a broadcast, as required by limitation [7.1]. Hart, ¶162-63.

Because Masumoto does not disclose element [7.1], Petitioner fails to meet its burden of showing that Claim 7, or Claims 8-10 (which depend from Claim 7) are unpatentable by a preponderance of the evidence under Ground 1 (or Ground 2, which simply references Ground 1 for this limitation). Petition, 74; Hart, ¶164.

2. [11.1]: Neither Masumoto nor Swafford discloses UDP multicast data packets

Claim 11 requires that “the communication stage is designed to use UDP multicast data packets for the communication.” For Ground 1, Petitioner relied heavily on Masumoto for the disclosure of the communication stage for element [1.3]. Petition, 25-27. For this element, Petitioner relies entirely on Swafford and the knowledge of a POSITA to show this limitation is met. Petition, 46. Petitioner is incorrect. Hart, ¶165.

For its contention that Swafford discloses UDP, Petitioner cites Swafford's disclosure that it may use a wired communication path, through a network. Petition, 46 (citing Ex-1004, [0274]). From this limited disclosure of a wired network, Petitioner asserts that element [11.1] is met because “UDP is a well-known communication protocol.” *Id.* But being a well-known protocol is not enough to show that a POSITA would use UDP in Swafford (or Masumoto). Hart, ¶166. Petitioner's expert relies on Kipp (a reference not used in Ground 1) to show that UDP is a well-known protocol. Ex-1003, ¶137. But as Dr. Tentzeris acknowledges, Kipp recites numerous

network protocols suitable for video delivery, including TCP/IP, HTTP/1.1, and HTTP/2.0. *Id.* (citing Ex-1006, [0129]). Dr. Tentzeris even stated that there are reasons to choose TCP/IP over UDP and that he would normally use TCP/IP. Tentzeris Dep., 62:2-5, 64:3-9, 66:24-67:2, 68:19-22. Neither Petitioner nor its expert provides any rationale for why a POSITA would choose UDP over any other communication protocol, including those listed in Kipp. Hart, ¶167. Moreover, Petitioner conflates communication for downloading video content—which is all the cited section of Kipp addresses—and communication of progress-data—which is what is required of the communication stage claimed in the '669 Patent. *Id.* These are two different types of communication. *Id.* Importantly, the '669 Patent discloses a system where video is already downloaded to the playback devices. Ex-1001, 2:15-28. Therefore, the communication protocol a POSITA might use for transmitting video is irrelevant. Hart, ¶167. What matters is what communication protocol a POSITA would use for transmission of the data required by the challenged claims, including progress-data. *Id.* Petitioner provides no reason why a POSITA would have found it obvious to use UDP for transmitting progress data in Swafford or Masumoto. *Id.*

Even were Kipp's disclosure relevant (it is not), it discloses only UDP communication, and does not disclose using UDP *multicast* data, as required by this limitation. *Id.*, ¶168. UDP is capable of unicasting and broadcasting data, in addition to multicasting data. *Id.* In his deposition, Dr. Tentzeris admitted that UDP is capable

of unicasting data. Tentzeris Dep., 50:25-51:2. In fact, use of unicast in UDP communications is the most common case. Hart, ¶168; Ex-2003, 4. And Petitioner provides no rationale for a motivation to use multicast data over any other form of UDP data. *Id.*

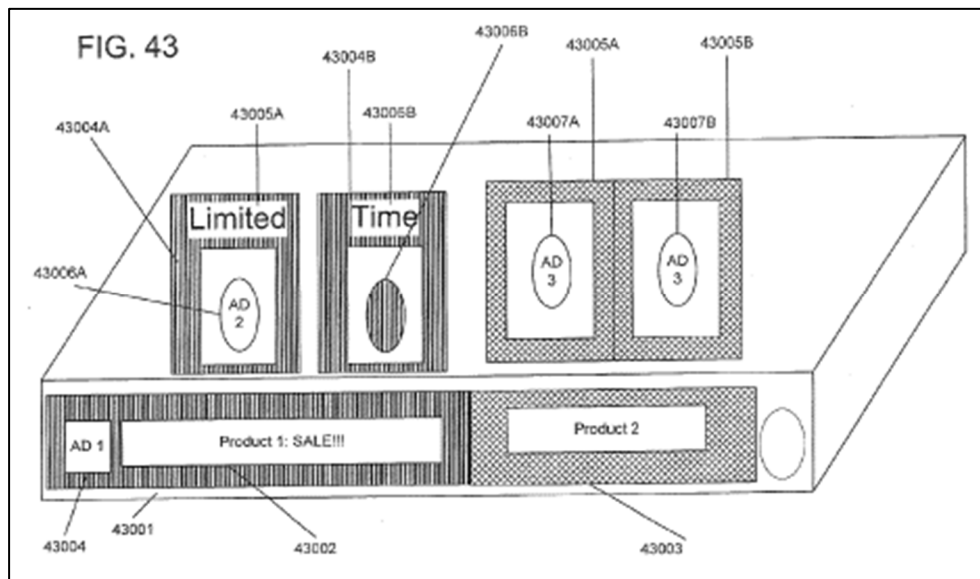
Because Petitioner has failed to show how element [11.1] is met, Petitioner fails to meet its burden of showing that Claim 11 is unpatentable by a preponderance of the evidence under Ground 1. Hart, ¶169.

C. A POSITA would not have been motivated to combine Masumoto and Swafford

Even if the Swafford/Masumoto combination disclosed all limitations of the challenged claims (it does not), Petitioner has not shown that there would have been a motivation to combine Swafford and Masumoto. Swafford and Masumoto disclose very different systems. *Id.*, ¶170. Swafford discloses small displays on shelves and on products in a merchandising setting, whereas Masumoto discloses a large multi-display apparatus. *Compare* Ex-1004, Fig. 43, *with* Ex-1005, Fig. 1. Further, while Masumoto focuses on synchronization between the displays, *see, e.g.*, Ex-1005, [0102]-[0126], Swafford does not even recognize synchronization as an issue to be addressed. Hart, ¶170. Petitioner fails to provide a cohesive argument for why a POSITA would have been motivated to combine Swafford and Masumoto, or how such a combination would work. Hart, ¶¶170-71. Instead, Petitioner takes a

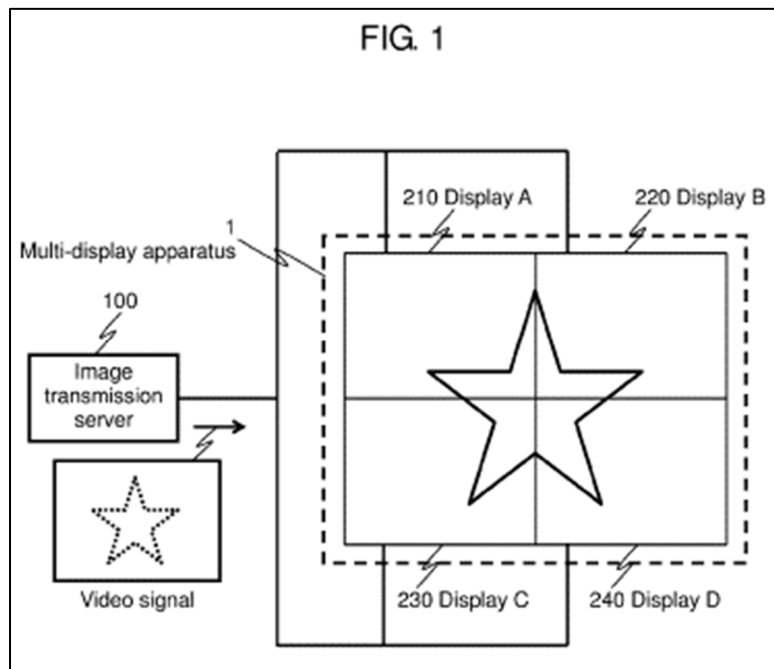
scattershot approach to motivation to combine. But, as described below, each rationale is fatally flawed.

Petitioner argues that “Swafford and Masumoto are designed to achieve the same goal to synchronize a video across multiple displays.” Petition, 52. This is incorrect. Hart, ¶172. The displays contemplated by Swafford and Masumoto are fundamentally different and involve different considerations. *Id.*, ¶173. Swafford relates to a “merchandizing display” with “a continuous display formed by electronic displays embedded along product shelves and on the packages.” Ex-1004, Abstract. Swafford’s merchandizing displays “can be provided with any number of displays.” *Id.*, [0388]. As shown in Figure 43 (below), these continuous displays may each have a wide but very short aspect ratio, and they may be attached to each other lengthwise, effectively making them even wider. Hart, ¶173. Further, Swafford contemplates displaying video “on the packages” themselves. Ex-1004, Abstract. The packages shown in Figure 43 have a completely different aspect ratio than the shelf labels and include a different number of pixels per screen. Hart, ¶173.



Ex-1004, Figure 43.

Masumoto, on the other hand, contemplates “video wall systems and signage systems,” such as what one might see in a sports bar or displaying a fast-food menu. Ex-1005, [0148]. In Masumoto, the video server “sends same video signal to each of display A210 to display D240 simultaneously.” *Id.*, [0039]. “Each of display A210 to display D240 cuts out and displays a portion in charge from the received image. By combining four displays A210 to D240, a single image is displayed.” *Id.* This is shown in Figure 1 (below). Hart, ¶174.



Ex-1005, Figure 1.

The only “specific information” Masumoto adds to its video signal is a “time stamp,” “frame number,” or “time sample;” Masumoto discloses nothing related to adjusting to the differing aspect ratios or differing numbers of pixels per screen because Masumoto assumes the displays are all the same. Ex-1005, [0107]; Hart, ¶175.

The two references, thus, are not directed to the same goal. Hart, ¶176. Masumoto involves simple video processing using uniform displays and a network server to expand the size of a streaming video from covering one screen to covering four, whereas Swafford pieces together streaming video segments having different widths and heights. *Id.* Petitioner has not shown a POSITA would have had any motivation to use Masumoto to improve upon Swafford, as they are directed to fundamentally different problems. *Id.*

Petitioner also claims that Swafford's "express objective" was to "simultaneously output a different portion of the streaming video," and that satisfying that objective would have motivated a POSITA to combine Swafford and Masumoto. Petition, 53 (citing Ex-1004, [0423]). This is also incorrect. Hart, ¶177. Indeed, Swafford already satisfies this objective by providing "a system for forming a continuous display along" electronic label devices positioned along product shelves. Ex-1004, [0423]. Petitioner never explains why a POSITA would be motivated to look outside Swafford to solve a problem Swafford expressly solves. Hart, ¶177.

Dr. Tentzeris says that there was "a well-recognized need in synchronizing video displays—a need for low bandwidth and simple, inexpensive hardware." Petition, 53. But even if true, Swafford expressly discloses that his systems can be implemented with "off-the-shelf" components. Ex-1004, [0257]. Thus, Swafford itself belies Petitioner's supposed well-recognized need. Hart, ¶178.

Unable to show a motivation to combine from the references themselves, Petitioner relies on hindsight and two references not raised in Ground 1—Yamada (Ex-1010) and Kipp (Ex-1006). Petition, 53-54. According to Petitioner, Yamada identifies a similar problem to that solved by the '669 Patent. But that is irrelevant to any motivation for a POSITA to combine two other references (Swafford and Masumoto). *Id.* Further inapposite to an explanation of the Swafford-Masumoto combination, Yamada is a system for streaming video to multiple "video information

reproduction devices.” Ex-1010, [0100]-[0101]. Kipp discloses similar, streaming video to “multiple premises 102 (e.g., businesses, homes, consumer dwellings, etc.).” *See* Kipp, Ex-1006, [0028]. Neither Yamada nor Kipp have anything to do with electronic shelf labels, and certainly do not demonstrate any well-recognized need. Hart, ¶179.

It does not matter that both Swafford and Masumoto discuss LCD displays. Petition, 54-55 (citing Ex-1004, [0330]; Ex-1005, [0040]). None of the purported examples offered by Petition for ways to improve the LCD screens have anything to do with the LCD screens themselves. Hart, ¶180. For instance, Petitioner points to the ability to have “different displays communicate with each other to synchronously display a video.” Petition, 54-55. But that has nothing to do with whether the display is an LCD or anything else. Hart, ¶180. Nor does the fact that Masumoto’s displays may “transmit[] specific information of a video signal displayed on the display at specific time, using frame numbers as the specific information, broadcasting the frame correction quantity to implement synchronization, loading the video data upfront to play, transmitting the video data as compressed data, transmitting the specific information repeatedly, [and] embedding the frame correction quantity in a synchronization command.” Petition, 55. These supposed improvements have nothing to do with the LCD screens, and thus, these cannot constitute motivations to improve Swafford’s LCD with Masumoto’s LCD. Hart, ¶180.

Petitioner's expert's analysis adds nothing. Hart, ¶¶181-82. Dr. Tentzeris simply parrots the analysis in the Petition, providing no material explanation at all. Petition, 52-56 (citing "First" through "Fourth" motivations for combination), *with* Ex-1003, ¶¶152–58 (parroting the "First" through "Fourth" motivations for combination). *See Xerox Corp. v. Bytemark, Inc.*, IPR2022-00624, Paper 9 at 15-16 (Aug. 24, 2022) (precedential) (affording expert opinion little to no weight or probative value when it replicates the flawed analysis of the petition *verbatim* and fails to "cite to any additional supporting evidence or provide any technical reasoning to support" the opinion).

Even assuming Swafford and Masumoto do share some "structural similarity"—which they do not—this does not sufficiently support Petitioner's alleged motivation to combine. Hart, ¶183. "The obviousness inquiry does not merely ask whether a skilled artisan could combine the references, but instead asks whether 'they would have been motivated to do so.'" *Adidas AG v. Nike, Inc.*, 963 F.3d 1355, 1358-60 (Fed. Cir. 2020) (citation omitted). Therefore, even though two references may be compatible because they discuss similar structure or techniques, that does not resolve "fundamental differences between the references" that show the prior art is otherwise not obvious to combine. *Id.*

Petitioner fails to show that a POSITA would have been motivated to combine Swafford and Masumoto. Hart, ¶184. As such, Ground 1 fails.

VI. GROUND 2: The Masumoto/Kipp/Takashi Combination Does Not Disclose Several Limitations of the Challenged Claims

A. Claim 1 (and therefore all challenged claims)

As with Ground 1, Petitioner relies solely on Masumoto in Ground 2 to teach limitations [1.3b] and [1.3c]. Petition, 65-66. For limitation [1.4], Petitioner relies on Kipp and Takashi. *Id.*, 66-67. That limitation requires, in part, display devices that display “product information or product price related information” “overlapping with a video content or substituting a video content.” But because both Kipp and Takashi have entirely separate sections for video content and product information, Petitioner proposes an understanding of Takashi that is not how a POSITA would see it. Further, Petitioner takes a scattershot approach to motivation to combine, without taking into account how a POSITA would consider these various references. Hart, ¶187.

1. [1.3b] and [1.3c]: Masumoto does not disclose any playback devices that meet both [1.3b] and [1.3c]

For Ground 2, Petitioner relies solely on its discussion of Masumoto in Ground 1 for limitations [1.3b] and [1.3c]. Petition, 65. For the same reasons detailed for Ground 1, Masumoto does not disclose any playback devices that satisfy both limitations [1.3b] and [1.3c]. Hart, ¶188.

2. [1.4]: Neither Kipp nor Takashi disclose limitation [1.4]

Element 1.4, requiring the virtual electronic shelf label to be within a section of the display area, and overlapping or substituting for video content, was one of the limitations the Examiner cited in allowing the claims. Ex-1002, 15. Petitioner asserts that a “POSITA would have been motivated to implement the video content displayed on Kipp’s multiple playback devices and the product content displayed on Takashi’s image display terminal, in Masumoto’s multiple displays when applying Masumoto’s multiple-display apparatus in a specific business premise.” Petition, 71. Such a combination would not make sense to a POSITA. And anyway, the combination would fail to meet element [1.4] because it fails to teach overlapping with video content or substituting for video content. Hart, ¶189.

a. Kipp does not disclose electronic shelf labels

Kipp discloses playing content on multiple screens in, for example, a sports bar, classroom, or meeting room. Ex-1006, [0036]. Kipp does not disclose virtual electronic shelf labels, much less shelf labels within a different display overlapping with or substituting for video content. Hart, ¶¶190-91.

Petitioner attempts to fill in the blanks in Kipp by manufacturing its own disclosures. So, for instance, Petitioner claims that if the system of Kipp were installed “in a business premise, such as a retail store setting, the content associated with the premise will include product information.” Petition, 67. But Kipp itself makes no

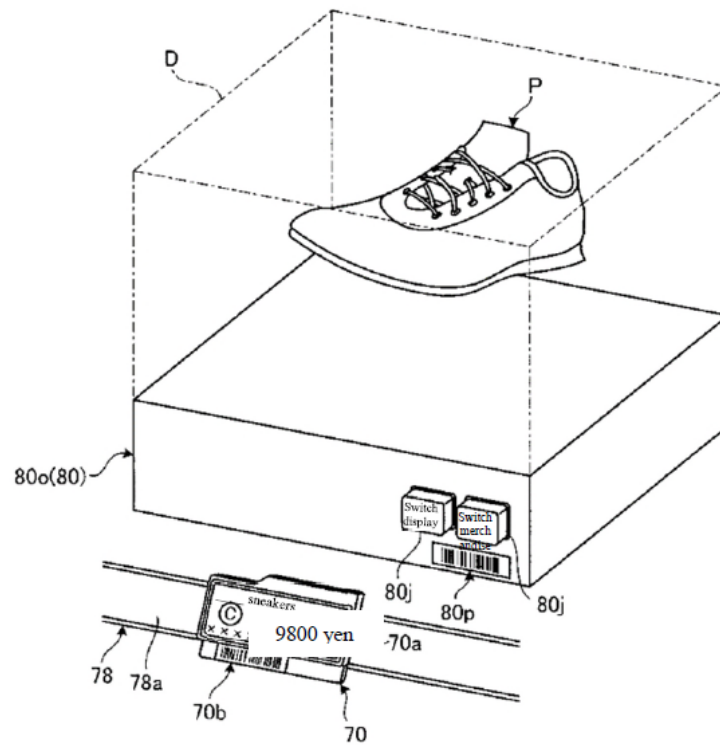
such disclosure and Petitioner cites none. Indeed, while Kipp refers to particular locations where its system might be installed—“sports bars, classrooms, [and] meeting rooms,” Ex-1006, [0036]—it makes no reference to any “business premise” or “retail store setting,” let alone including “product information” if it were installed in such a setting. Hart, ¶192. Nor does Petitioner identify any evidence that a POSITA would have thought to install Kipp’s system in such a premise or to include “product information” when it did so. *Id.* Instead, Petitioner provides only the conclusory opinion of its expert, which simply parrots the bare assertions in the Petition. Ex-1003, ¶178; *see NXP B.V. et al. v. Bell Semiconductor, LLC*, IPR2021-00967, Paper 32 at 37 (Oct. 6, 2022) (determining that the declaration of Petitioner’s expert, which “simply parrot[ed] the language in the Petition, without offering the underlying facts on which the opinion [was] based” was “conclusory and entitled to little or no weight”). But “conclusory expert testimony is inadequate to support an obviousness determination.” *TQ Delta, LLC v. CISCO Sys., Inc.*, 942 F.3d 1352, 1359 (Fed. Cir. 2019) (reversing the Board’s decision since its obviousness determinations was based on conclusory expert testimony as opposed to substantial evidence); *see also Content Square SAS v. Medallia, Inc.*, IPR2022-00316, Paper 13 at 37-38 (July 14, 2022) (affording the declaration of the petitioner’s expert “little probative weight” because “much of the testimony merely parrot[ed], essentially verbatim, the arguments in the Petition” without “provid[ing] any facts, data, or analysis to support the

opinion stated”). Nor does Petitioner explain how or why—even presuming Kipp were used in circumstances not disclosed in the reference itself—“product information” would be displayed within a section that overlaps with or substitutes for video content. Hart, ¶192. No such disclosures exist in Kipp and Petitioner does not contend otherwise.

b. Petitioner manufactures a view of Takashi that is not how a POSITA would understand it

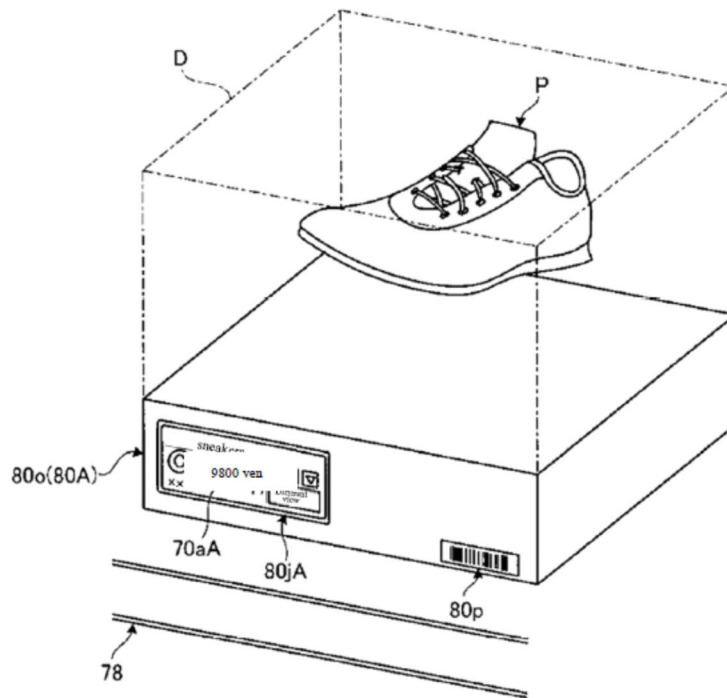
Takashi discloses two embodiments: the Figure 5 embodiment and the Figure 14 embodiment. Hart, ¶193. Neither meets element [1.4].

Takashi's Figure 5 embodiment, shown below, has two entirely separate terminals, a “shelf tag terminal 70,” potentially displaying product and/or price information and an “image display terminal 80,” potentially displaying video content. Ex-1008, [0019]-[0021]. Notwithstanding Petitioner's assertion to the contrary, Petition, 70, there is no overlap between these two display sections, as required by element [1.4]. Hart, ¶193.



Ex-1008, Figure 5.

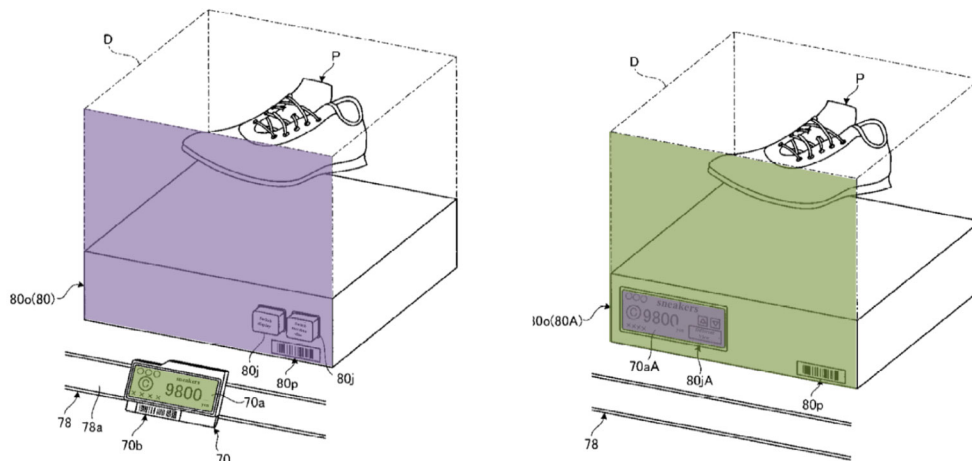
The Figure 14 embodiment, shown below, includes two display portions—70aA potentially displaying product or price information and D potentially displaying video—on a single terminal. Ex-1008, [0051]. In addition, display portion 70aA (and the associated input operation unit 80jA) are not on the merchandise display shelf 78, and therefore is not a “virtual electronic shelf label” as required by limitation [1.4]. Hart, ¶194.



Ex-1008, Figure 14.

But even though these display portions are on the same terminal, there is no indication that there is overlap between them. Hart, ¶195. To the contrary, a POSITA would have understood that the bottom part of the terminal is the housing (80o), which includes discrete display sections 70aA and 80p that are separate from display section D. Ex-1008, [0021]; Hart, ¶195.

In order to show Takashi as meeting element [1.4], Petitioner and Dr. Tentzeris provide the following annotated images of Takashi's Figures 5 and 14.

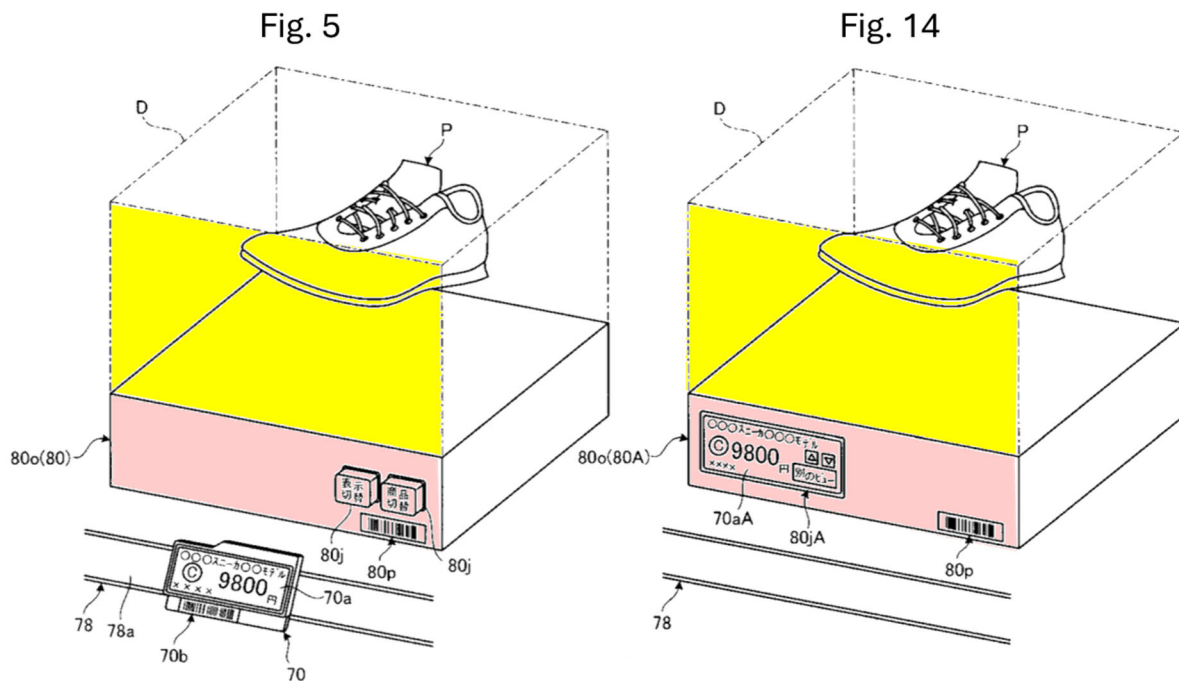


Petition, 68-69; Ex-1003, ¶¶179, 180.

As can be seen from the purple shading of Figure 5 and the green shading of Figure 14, Petitioner is asserting that Takashi's entire device, including the housing (80o) at the bottom, is covered by display (D). Hart, ¶196. Dr. Tentzeris reiterated this at this deposition. Ex-2002, 167:15-168:16 ("And then a display portion D would be the whole system allowing videos...."). Dr. Tentzeris went so far as to say it would be "quite impractical" to have the display end at the solid line indicating the housing (80o). *Id.*

As detailed by Dr. Hart, a POSITA would have understood the display (D) to end at the housing (80o), and not to cover the entire device. Hart, ¶197. Under this proper understanding of Takashi's figures, Petitioner cannot show that element [1.4] is met because the purported virtual electronic shelf labels (shelf tag 70, according to Petitioner, Petition, 68) are not displayed within the purported screen (display (D)) and do not overlap or substitute for any video content. Hart, ¶197.

As shown below in the annotated versions of Takashi's original Figures 5 and 14, Takashi intended, and a POSITA would have understood, only the yellow shaded portion in each figure to be the “display portion D” and the pink portion in each figure to be the “housing 80o,” and together the union of the yellow and pink portions in each figure (what Dr. Tentzeris indicates with purple in annotated Figure 5 and green in his annotated Figure 14) comprise the entire “display terminal” labeled “80” in Figure 5 and “80A” in Figure 14. Hart, ¶¶198-204.



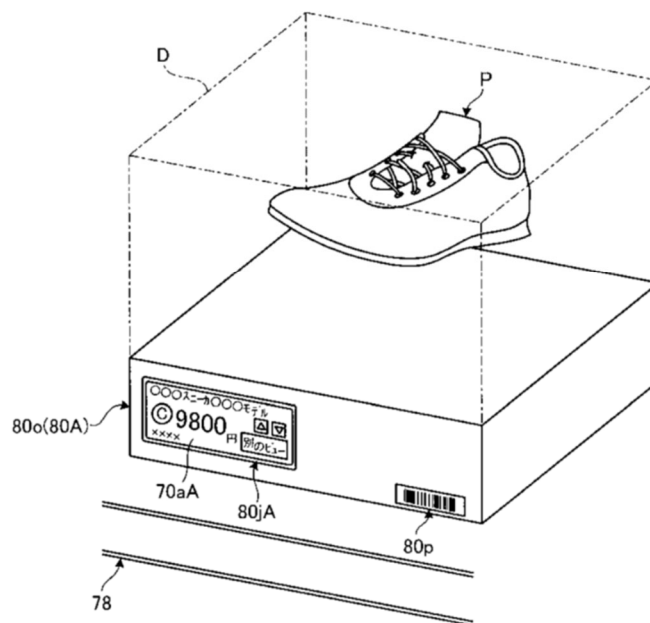
Ex-1007, Figs. 5, 14 (annotated)

In Figure 5, Takashi uses the label “80” to refer to the entire region that Dr. Tentzeris shows in purple. But this entire region is separated into two distinct and disjoint portions: the upper “display area D” and the lower “housing 80o.” Hart,

¶¶205-06. As such, a POSITA would not have considered display (D) to continue into the housing (80o). Hart, ¶197.

Figure 14 is a “variation” of Figure 5 (*see* Ex-1008, [0051]). A POSITA would have understood that Figure 14’s “display portion D” refers only to the upper portion of “display terminal 80A.” Hart, ¶207. The lower portion of “display terminal 80A” is labeled “80o” identically with its labeling in Figure 5, where it is identified as a “housing” that is distinct and disjoint from the “display portion D.” *Id.* For reference, below is the original (untranslated) version of Takashi’s Figure 14.

【図 14】



Ex-1007, Figure 14.

Therefore, as Takashi does not disclose playing video other than in display section D, and certainly not within the housing 80o, on which display sections 70aA

and 80p are mounted, Figure 14 does not provide the necessary overlap or substitution required by element [1.4]. Hart, ¶208.

Not only do neither Figure 5 nor Figure 14 show a display area (D) that covers the entire device, but Petitioner has not explained how or why these two mutually exclusive embodiments would be combined. Hart, ¶198.

Given that Takashi's shelf tags (the purported virtual electronic shelf labels) are not displayed within display section (D), Petitioner tries another tack: Asserting that display section D—not display section 70aA or shelf tag 70—is itself an electronic shelf label. Petition, 70. But this is supported by nothing but the conclusory opinion of Petitioner's expert. Hart, ¶209. Takashi discloses a discrete component as the shelf tag terminal. *Id.* For Figure 5, this is “shelf tag terminal 70.” Ex-1008, [0020]. For Figure 14, Takashi describes that “first display portion 70aA” contributes the shelf label component in “integral combination of the shelf tag terminal 70 and the image display terminal 80.” *Id.*, [0051]. Takashi never discloses using display section D as a shelf label, and a POSITA would not have understood it to be a virtual electronic shelf label, as required by element [1.4]. Hart, ¶209.

Finally, Petitioner makes the same incorrect assertion from Ground 1 based on Swafford (not a reference used in Ground 2) that “a POSITA would understand that designing substitutive video content in overlapping display areas is commonly used to attract customers' attention.” Petition, 71. But Swafford was not a reference

used in the combination for Ground 2, so a POSITA would not have understood its relevance to the Ground 2 combination. Even if Swafford was considered for Ground 2, as detailed for element [1.4] in Ground 1, the section of Swafford cited by Petitioner says nothing about overlapping or substituted video and is only about using the shelf label in unison with the product, which are separate and discrete components. Hart, ¶¶210-12.

B. Claims 7 (and therefore claims 8-10) and 11

1. [7.1]: Masumoto does not disclose broadcasting adjustment data

Petitioner relies entirely on Ground 1 for the argument that limitation [7.1] is met in Ground 2. Petition, 74. Masumoto does not disclose limitation [7.1] for Ground 2 for the same reasons Masumoto does not disclose limitation [7.1] for Ground 1. Hart, ¶213.

2. [11.1]: Kipp does not disclose UDP multicast data packets

Petitioner's entire argument for Ground 2 is that UDP is a well-known protocol, citing the same phrase from Kipp relied on by Dr. Tentzeris for Ground 1. Petition, 75. As detailed for Ground 1, Kipp lists a number of protocols that it purports can be used for video delivery. As also detailed for Ground 1, Petitioner conflates communication for downloading video content—which is all the cited section of Kipp addresses—and communication of progress-data—which is what is required

of the communication stage claimed in the '669 Patent. Hart, ¶214. These are two different types of communication. *Id.* Importantly, the '669 Patent discloses a system where video is already downloaded to the playback devices. Ex-1001, 2:15-28. Therefore, the disclosure in Kipp of using UDP for downloading video content is irrelevant to showing disclosure of using UDP for the communication stage of the challenged claims. Hart, ¶214. Beyond the disclosure of Kipp, Petitioner provides no reason why a POSITA would have found it obvious to use UDP for transmitting progress-data. Hart, ¶¶214-16.

Further, even were Kipp's disclosure of using UDP for downloading video content considered a disclosure of using UDP to send progress-data via the communication stage, Kipp does not disclose using UDP *multicast* data, as required by this limitation. Hart, ¶217. As discussed for Ground 1, UDP is capable of unicasting and broadcasting data, in addition to multicasting data. *Id.* In his deposition, Dr. Tentzeris admitted that UDP is capable of unicasting data. Tentzeris Dep., 50:25-51:2. In fact, use of unicast in UDP communications is the most common case. Hart, ¶217. Petitioner provides no rationale for a motivation to use multicast data over any other form of UDP data. Hart, ¶217.

Because Petitioner has failed to show how element [11.1] is met, Petitioner fails to meet its burden of showing that Claim 11 is unpatentable by a preponderance of the evidence under Ground 2. *Id.*, ¶218.

C. A POSITA Would Not Have Been Motivated to Combine Masumoto, Kipp, and Takashi

Even if the Masumoto/Kipp/Takashi combination disclosed all limitations of the challenged claims (it does not), Petitioner has not shown that there would have been a motivation to combine these references. As with Ground 1, Petitioner is trying to combine Masumoto, which discloses a large multi-display system, with a reference focused on small shelf-based displays (Takashi). Hart, ¶219. Beyond these two disparate references, Petitioner adds on a third: Kipp, which discloses playing video on multiple monitors. *See, e.g.*, Ex-1006, [0025]. Unlike Masumoto, Kipp does not disclose playing different parts of a video on different displays. Hart, ¶219. And unlike Takashi, Kipp does not disclose anything related to shelf tags or product video. *Id.*

Without any connection between these references, Petitioner provides seven different rationales for combining Masumoto with Kipp and Takashi. Petition, 82-87. All are flawed. Hart, ¶220.

First, Petitioner asserts it would have been obvious to combine Masumoto with Kipp because “Masumoto and Kipp are designed to achieve the same goal to synchronize a video across multiple displays.” Petition, 83. That is incorrect. Hart, ¶221. Masumoto contemplates “video wall systems and signage systems,” such as what one might see in a sports bar. Ex-1005, [0148]. Masumoto is directed toward a

“multi-display apparatus for displaying a single image by combining a plurality of displays.” Ex-1005, Abstract, [0148]. By contrast, Kipp is directed to “reproduction of video content” for synchronized playback at “multiple premises,” such as when people at different households want to watch a live sporting event on Amazon Prime. Ex-1006, [0004], [0028]; *see also* Hart, ¶221. In other words, Masumoto displays different images on each display where all of the displays are in one location, while Kipp displays the same image on multiple displays, where the displays may be in different locations. *Id.*

Second, Petitioner argues it would have been obvious to combine Masumoto and Kipp due to a “well-recognized need in a business premise – a need for synchronously providing clients with promotional information or advertisement.” Petition, 83. To support this supposedly “well-recognized need,” Petitioner cites the ’669 Patent. *Id.* Using the challenged patent as a roadmap for modifying the prior art is impermissible hindsight and should be rejected. *See InTouch Techs., Inc. v. VGO Commc’ns, Inc.*, 751 F.3d 1327, 1351-52 (Fed. Cir. 2014) (determining that an expert “succumbed to hindsight bias in her obviousness analysis” since she “relied on the . . . patent itself as her roadmap for putting what she referred to as pieces of a ‘jigsaw puzzle’ together”). “[A]llowing the challenger to use the challenged patent as a roadmap to reconstruct the claimed invention using disparate elements from the prior art . . . [is] the impermissible *ex post* reasoning and hindsight bias that *KSR*

warned against.” *TQ Delta, LLC*, 942 F.3d at 1361; *see also Micron Tech., Inc. v. Godo Kaisha IP Bridge 1*, IPR2020-01007, Paper 36 at 53 (Dec. 1. 2021) (concluding that petitioner used “the challenged patent as a roadmap for fitting together distinct pieces within the prior art, a clear example of impermissible hindsight reasoning,” since the petitioner cited to the challenged patent to support that there was a known problem). Petitioner also cites Kipp for the propositions that “playback devices deployed to a common location (e.g., a sports bar, a residence, etc.) may synchronize” and advertisements may “playback on multiple digital billboards,” (Ex-1006 [0023], [0124]), and Clontz for the proposition that “[t]he shelf may be implemented with ‘connected’ or ‘unconnected-displays.’ ‘Connected’ means that displays that run the same ads all the time” (Ex-1009, [0032]). But none of these citations support the proposition that there was a “well-recognized need” as the Petition alleges. Petition, 83-84; *see Hart*, ¶222.

Third, similar to Ground 1, Petitioner argues there is a “structural similarity between Kipp’s displays and Masumoto’s displays,” such that a “POSITA would have recognized, from Kipp’s teaching, that it would improve Masumoto’s similar device (i.e., displays).” Petition, 84-85. This is also incorrect. *Hart*, ¶223. In Kipp, “[t]he display devices 206 may be any type of device configured to receive a video signal and output visual images corresponding to that video signal.” Ex-1006, [0041]. Petitioner does not explain how a POSITA would look at a reference

describing “any type of device” and recognize an improvement that could be applied to a specific type of device, and in particular, to reach an electronic shelf label. Hart, ¶223. But even giving Petitioner the benefit of the doubt, the Petition does not explain how Kipp improved a display device in such a way that it would have been obvious to improve a display device in Masumoto in the same way, or how that would result in the electronic shelf labels described in the '669 Patent. *Id.*

Fourth, Petitioner argues a POSITA would have been “readily able to combine” the three references “with an expectation of success,” stating it would have been “routine.” Petition, 85. But Petitioner fails to explain how combining Masumoto’s big-screen video synchronization techniques with Takashi’s electronic shelf tag system and Kipp’s multi-premise streaming system would have been routine or would come with an expectation of success. Hart, ¶224. Petitioner and its expert offer nothing beyond bare conclusions for this point. *Id.*; Petition, 85; Ex-1003, ¶228.

Fifth, Petitioner argues a “POSITA reading Masumoto and Kipp naturally would have looked to Tak[a]shi for additional details regarding how to display advertisement contents in a business premise such as a retail store” due to a “universal, obvious goal of all such systems to display promotion content related to the premise where the systems are located.” Petition, 85. But Petitioner’s argument is just that: argument. Hart, ¶225. Petitioner fails to offer factual support or evidence; instead,

the Petition points to conclusory expert opinion that “bears no relation to any specific combination of prior art elements,” much less combining the elements “*in the way the claimed invention does.*” *ActiveVideo Networks, Inc. v. Verizon Comms., Inc.* 694 F.3d 1312, 1327-28 (Fed. Cir. 2012) (emphasis original). Like *ActiveVideo*, the explanation of Petitioner’s expert is flawed because it is generic. *Compare* Petition, 85 (a “POSITA reading Masumoto and Kipp naturally would have looked to Tak[a]shi” to realize a “universal, obvious goal of all such systems”), *with ActiveVideo*, 694 F.3d at 1327-28 (finding the expert’s opinion that a POSITA “wanted to build something better...more efficient, cheaper...that had more features...[and] more attractive to your customers” to be “generic” and therefore insufficient for supporting a determination of obviousness); *see also Xerox Corp.*, Paper 12 at 14-16.

Sixth, Petitioner alleges a POSITA would have understood “that to *attract* customers,” “‘provide additional information to a customer or to attract a customer’s attention’ ... , designing other promotion content to substitute a part of an advertisement video is a commonly used promotional strategy in a business premise, e.g., a retail store.” Petition, 86. It is not clear what Petitioner is proposing here, or which pieces of prior art should be modified, or how. Hart, ¶226. But such a proposed motivation to combine fails because it does not clearly articulate the proposal, which pieces of prior art should be modified or how. *See ActiveVideo*, 694 F.3d at 1328 (finding the expert’s opinion that a POSITA “wanted to build something

better...more efficient, cheaper...that had more features...[and] more *attractive to your customers*” to be “generic” and therefore insufficient for supporting a determination of obviousness); *Xerox Corp.*, Paper 12 at 15-16.

Finally, Petitioner alleges it “is a universal, obvious goal of all such systems to attract customers’ attention” and that a “POSITA reading Masumoto and Kipp would have been motivate[d] to apply the shelf tag terminal 70 and the image display terminal 80/80A to the combination of Masumoto and Kipp.” Petition, 86. But this reasoning amounts to the same flawed, generic rationale as discussed above. *See ActiveVideo*, 694 F.3d at 1329; *Xerox Corp.*, Paper 12 at 15-16; Hart, ¶227-28.

VII. CONCLUSION

For all the above reasons, Petitioner has not met its burden of demonstrating the unpatentability of any challenged claim. Accordingly, Patent Owner requests the Board confirm the patentability of claims 1-15.

Respectfully submitted,

Dated: September 6, 2024

By: / Jessica C. Kaiser /
Jessica C. Kaiser
Reg. No. 58,937
Lead Counsel for Patent Owner

CERTIFICATE OF COMPLIANCE

Pursuant to 37 C.F.R. § 42.24(d), I, Jessica C. Kaiser, certify that **PATENT OWNER'S RESPONSE** contains 12,233 words, excluding those portions identified in 37 C.F.R. § 42.24(a), as measured by the word-processing system used to prepare this paper.

Dated: September 6, 2024

By: / Jessica C. Kaiser /
Jessica C. Kaiser, Reg. No. 58,937

CERTIFICATE OF SERVICE

Pursuant to 37 C.F.R. § 42.6(e), I certify that on September 6, 2024, a copy of **PATENT OWNER'S RESPONSE** was served upon the below-listed counsel by electronic mail:

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Dated: September 6, 2024

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