

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

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

Petitioner

v.

SES-IMAGOTAG INC.,

Patent Owner

Case No.: IPR2024-00208

Patent No. 11,010,709

PETITIONER'S REPLY

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Exhibit List¹

Exhibit No.	Description
1001	U.S. Patent No. 11,010,709
1002	Prosecution History of U.S. Patent No. 11,010,709
1003	U.S. Patent No. 9,378,513 (“Wu”)
1004	U.S. Patent Application Publication No. 2017/0293959A1 (“Itou”)
1005	U.S. Patent Application Publication No. 2013/0325638A1 (“Auclair”)
1006	U.S. Patent Application Publication No. 2009/0231135A1 (“Chaves”)
1007	Certified translation of Japan Patent Application Publication No. 2008-77131A by Fujiwara (“Fujiwara”)
1008	Japan Patent Application Publication No. 2008-77131A by Fujiwara
1009	Declaration of Dr. Manos M. Tentzeris
1010	<i>Curriculum Vitae</i> of Dr. Manos M. Tentzeris
1011	PTAB Email dated 03.06.2024 re IPR2024-0208
1012	Fahy Declaration in Support of Motion for PHV
1013*	Transcript from the Deposition of Dr. Surati
1014*	European Patent 3,329,447B1
1015*	U.S. Patent Application Publication No. 2020/0184855A1
1016*	U.S. Patent Application Publication No. 2018/0251253A1

¹ Petitioners have noted new exhibits with “*”.

I. INTRODUCTION

Patent Owner's Response does not raise any persuasive reason to preserve the validity of the challenged claims.

Patent Owner improperly adds unsupported and incoherent limitations to the terms "location" and "planogram." It then argues, based on these proposed definitions, that Petitioner's prior art does not disclose locations or planograms. While agreeing that Wu discloses acquiring and transmitting one label identifier, Patent Owner argues that it does not disclose acquiring or transmitting a second label identifier. Patent Owner also argues that dependent claims 7, 8, 17, and 18 are not obvious. To do so, Patent Owner mischaracterizes or ignores clear and express disclosures found in prior art and the knowledge of a POSITA.

Finally, Patent Owner argues that Dr. Tentzeris' declaration repeats the Petition, is conclusory, and should be given no weight. Dr. Tentzeris' declaration consistently provides factual support and additional explanation from the lens of a POSITA. Agreement between the Petition and Dr. Tentzeris's declaration does not render Dr. Tentzeris's opinions conclusory and Dr. Tentzeris's declaration includes information that is not included in the petition.

II. CLAIM CONSTRUCTION

A. “Location”

All claims of the '709 Patent directly or indirectly recite the term “location,” the plain and ordinary meaning of which is clear to a POSITA. However, Patent Owner improperly adds a vague limitation it attempts to tie to various statements in the '709 Patent's specification and reads it into the claims to argue that “[l]ocation(s)’ must be represented in units that allow distance from a point of reference in the retail area to be determined.” See Paper 26, 16. Patent Owner appears to require that locations be provided as a function of distance, in units that represent a measured distance from a point of reference. The claims of the '709 Patent do not mention units and only some claims require distance measurements. Nothing in the specification of the '709 Patent – which does not mention “units” – compels adding these limitations. In fact, doing so would mean that a distance between labels is measured for all claims, despite that it is only required by claims 7, 8, 17, and 18.

In advancing its proposed construction, Patent Owner relies on descriptions of the “General Technical Field and Context of the Invention” in the '709 Patent. *Id.*, 18-19. However, the portion cited by Patent Owner simply discusses an advantage of interaction between the ESL and the mobile terminal as producing locations with “considerable precision, of the order of a few centimeters.” Ex. 1001, 1:53-2:2. The fact that “interaction between the ESL and the client terminal” produces higher

precision than “internal triangulation from beacons” does not mean that a location must be represented in units that allow distance from a point of reference to be determined. Paper 26, 19 (citing Ex. 1001, 1:44-2:2). Rather, read in context, this excerpt from the patent’s background section indicates that precision is needed to “know[] [with] which product the client is located[.]” Ex. 1001, 1:67-2:1. Presumably, where multiple ESLs are placed within a few centimeters of one another, prior art internal triangulation methods would not have been able to determine which ESLs were associated with which products. A retailer using the method described by the ’709 Patent does not encounter this issue because the order of shelf labels is recorded during installation.

The ’709 Patent describes a process for obtaining what it refers to as a “location” based on “an indication of relative positioning” without distance. *Id.*, 7:9-48. As acknowledged by the Patent Owner, the planogram of the ’709 Patent presents locations by means of a referential set of coordinates representative of the spatial organization of the retail area. Paper 26, 19 (citing Ex. 1001, 8:40-44). In particular, “a first coordinate can designate the shelf of the retail area, while a second can designate a section of the shelf, a third the level of the shelf, and a fourth the order of the location on this level.” Ex. 1001, 8:44-47 (emphasis added). Thus, the planogram of the ’709 Patent, even if taking the form of a cadastre, represents locations ordinally without measuring distance.

To represent locations in units that allow distance from a point of reference in the retail area to be determined, distance must be measured. Highlighting that locations need not generally be represented in such a manner, the '709 describes only one method to measure distance between shelf labels based on the displacement of a reading device. This method appears to describe a particular embodiment that relates to claims 7, 8, 17, and 18, which expressly require measuring distance. The '709 Patent notes that “the information of relative positioning transmitted to the computer system 2 can comprise a relative distance between [ESLs]. This distance can be acquired by measuring the displacement of the reading device... For this purpose, the reading device 3 comprises a displacement measuring member.” *Id.*, 7:60-8:2 (emphasis added). The '709 Patent does not describe another method of measuring distance and the method of this embodiment, which is the subject of only some claims, should not become a requirement for all claims based on faulty claim construction.² See *Innova/Pure Water, Inc. v. Safari Water Filtration Sys., Inc.*, 381

² In the European counterpart to the '709 Patent, Patent Owner's independent claims recited a method of updating a planogram with locations determined “based on a distance between the [ESLs], said distance being determined from the displacement of the mobile reading device.” Ex. 1014, cl. 1; see also cl. 9. Thus, despite referring

F.3d 1111, 1117 (Fed. Cir. 2004) (“[P]articular embodiments appearing in the written description will not be used to limit claim language that has broader effect.”).

Before institution, the Board correctly found that “[t]he claims and specification of the ’709 patent do not support Patent Owner’s position” that locations cannot be represented ordinally. Paper 14, 25-26. Patent Owner’s attempts to renew this argument should be rejected.

B. “Planogram”

As described above, locations recorded in the planogram of the ’709 Patent, can be represented ordinally. Further, the Board correctly noted that the claims and specification of the ’709 Patent set forth “the ordinary and customary meaning of planogram in the context of the ’709 Patent and the challenged claims.” Paper 14, 19. Both the claims and specification of the ’709 Patent expressly define a planogram as “association data between articles of a retail area and locations of said retail area.” *Id.* (citing Ex. 1001, 2:6-7, 10:13-15).

Patent Owner argues that the term “comprises” in claim 1 of the ’709 Patent is well understood to mean ‘including but not limited to.’ *Id.* (quoting *CIAS, Inc. v. All. Gaming Corp.*, 504 F.3d 1356, 1360 (Fed. Cir. 2007)). As the Board noted, the

to locations recorded in a planogram, the claims expressly require a determination based on distance.

specification of the '709 Patent, without the term “comprises”, clearly provides that “[a] planogram is a set of association data among articles of a retail area and locations of said retail area.” Paper 14, 19 (citing Ex. 1001, 2:6-7) (emphasis added). The '709 Patent also identifies “association data relative to the association between articles of a retail area and locations of said retail area” as “constituting the planogram.” Ex. 1001 at 5:16-20 (emphasis added). When the specification is clear about the scope and content of a claim term, there is no need to turn to extrinsic evidence for claim interpretation. MPEP 2111.01 (III) (internal citations omitted); *see also* Paper 14, 19 (“The specification, or more precisely, the written description, is the ‘single best guide to the meaning of a disputed term.’”) (quoting *Grace Instrument Indus., LLC v. Chandler Instruments Co.*, 57 F.4th 1001, 1008 (Fed. Cir. 2023)).

Patent Owner suggests that in order to use a planogram to “determine[] which products must be at which height, on which shelf, and over how many linear meters,” additional information must be included. Paper 26, 25 (citing Ex. 1001 at 2:7-9). However, association data between articles and locations is already a representation of where products are placed (at which height and on which shelf)³ and the shelf

³ Petitioner notes that each level of a shelf described in the '709 Patent can be referred to as a separate shelf of a shelving unit. Merriam-Webster defines a shelf as

space allocated for each product can be determined based on the products associated with locations on a given shelf.

Patent Owner relies on several extrinsic references and the testimony of its expert, Dr. Surati, to allege that “a planogram has its own meaning in the relevant art and that the claim non-exhaustively describes just one element thereof.” Paper 26, 28. The extrinsic references cited by Patent Owner do not compel the addition of any limitations. For example, the cited dictionary definition defines a planogram as “a schematic drawing or *plan for displaying merchandise in a store so as to maximize sales.*” Ex. 2016, 948 (emphasis added). Based on this definition, association data between articles and locations of a retail area without more, is a planogram. When questioned during his deposition, Dr. Surati responded that he did

“a thin flat usually long and narrow piece of material (such as wood) fastened horizontally (as on a wall) at a distance from the floor to hold objects” “Shelf.” <https://www.merriam-webster.com/dictionary/shelf>. Accessed 26 Nov. 2024. Based on this definition, a shelf number already represents “a distance from the floor” (*i.e.*, height). Thus, height can be determined based on the shelf number in Wu’s label location codes. During his deposition, Dr. Surati referred to shelves of a shelf, indicating that a shelf can be defined as a shelving unit or any individual shelf of a shelving unit. Ex. 1013, 74:6 and 75:19-20.

not provide a definition so as not to exclude any of the “so many things people call planograms[.]” Ex. 1013, 57:12-58:8.⁴ This is consistent with Petitioner's understanding that a chart associating products and locations of a retail area can be a planogram.

Patent Owner appears to suggest that a planogram must include information about “how many linear meters” are provided for products. Paper 26, 21-22. This information is not required by the definition of a planogram provided in the '709 Patent or by the dictionary definition cited in Patent Owner's Response. See Ex. 1001 at 2:6-7; *see also* Ex. 2016. The '709 Patent describes information about how many linear meters are provided for products as a “characteristic dimension” that can be included in a planogram to “improve representativeness and performance” rather than a requirement. Ex. 1001 at 9:6-27. Claim 9 of the '709 Patent expressly requires acquiring a characteristic dimension. *Id.* at 11:37-39. The decision not to mention a characteristic dimension in any other claim or the definition of planogram provided in the specification suggests that acquiring such information and including it with the association data is not a requirement. Other patents defining planograms confirm this. See, e.g., Ex. 1015, [0026] (“The term ‘planogram’ means a diagram,

⁴ Similarly, Patent Owner does not appear to propose a definition and noted that the Board need not expressly construe the term. Paper 26, 24.

model, or database that contains information regarding where products are placed or displayed for sale within a retail store, including without limitation, the *aisle, shelf location, and quantity.*"); Ex. 1016, [0012] ("A planogram is a diagram that shows *how and where* specific retail products should be placed on retail shelves or displays in a store.").

Patent Owner also argues that "the prosecution history further underscores what at least the Examiner and Applicant understood did and did not constitute a 'planogram.'" Paper 26, 25-28. Patent Owner contends that "the *only* reference the Examiner identified as teaching a 'planogram'" was Sarma. Paper 26, 27. Based on this, Patent Owner appears to argue that a planogram needs to be a visual representation, in line with the planogram of Sarma. However, as acknowledged by Patent Owner, the Examiner cited Mitsuoka to teach the planogram of claim 8 despite that Mitsouka, like Okina and Wu, discloses a planogram in the form of a database. *Id.*, 27, n. 4; Ex. 1002, 91-103.

ESL INFORMATION			POSITION INFORMATION			PRODUCT INFORMATION				DISPLAY ATTRIBUTE
ESL CODE	SIZE	COLOR	PRODUCT SHELF NUMBER	ROW (VERTICAL DIRECTION)	COLUMN (LATERAL DIRECTION)	PRODUCT CODE	PRODUCT NAME	DESCRIPTION	PRICE	
1001	M	MONOCHROME	101	1	1	10501	SAUCE FOR SWEET AND SOUR PORK	SICHUAN FLAVOR	420	1
1002	M	MONOCHROME	101	1	2	10689	SAUCE FOR MAPO DOUFU	SICHUAN FLAVOR	380	0
1003	M	MONOCHROME	101	1	3	10605	SAUCE FOR SAUTÉED SHREDDED BEEF WITH GREEN PEPPER	AUTHENTIC CANTONESE FLAVOR	380	0
1004	M	MONOCHROME	101	2	1	10566	SAUCE FOR TWICE COOKED PORK	AUTHENTIC CANTONESE FLAVOR	400	0
1005	S	COLOR	101	2	2	10802	STAR ANISE	MUST FOR CHINESE FOOD	580	0
1006	S	COLOR	101	2	3	10803	CHILI BEAN SAUCE	AUTHENTICALLY SUPER HOT	720	0
1007	S	COLOR								
1008	S	COLOR								
1009	S	COLOR								
1010	S	COLOR								
1011	S	COLOR								
1012	S	COLOR								
1013	M	MONOCHROME	102	1	1					
1014	M	MONOCHROME								
1015	M	MONOCHROME								
1016	M	MONOCHROME								

Ex. 2012, FIG. 16 (annotated by Patent Owner)

If the Examiner read “planogram” as limited to “a schematic drawing of fixtures that illustrate product placement[,]” as in Sarma, the Examiner would have combined Sarma with Okina and Mitsuoka to teach claim 8.

III. THE CHALLENGED CLAIMS ARE UNPATENTABLE

A. Ground 1: Claims 1-5, 10, 11-15, and 20 are Rendered Obvious over Wu

Patent Owner argues that Wu fails to disclose “locations,” a “planogram” or a reading device that “acquires and transmits a sequence of label identifiers.” See Paper 26, 30-31. As demonstrated below, Patent Owner’s arguments mischaracterize the ’709 Patent and ignore Wu’s disclosures.

1. Wu Discloses the “Locations” of the ’709 Patent.

Acknowledging that Wu uses the term “location,” Patent Owner relies on its extremely limited construction of the term to argue that Wu’s label location codes

“do not provide a representation of a location in units that allow distance from a point of reference in the retail area to be determined[.]” Paper 26, 32-35. As discussed in Section II.A, nothing in the '709 Patent compels this construction. Instead, the '709 Patent obtains what it refers to as a “location” based on an indication of relative positioning without distance and presents locations by means of a referential or a set of coordinates representative of the spatial organization of the retail area. *See infra*, Section II.A.

Similarly, Wu discloses recording locations represented by a “shelf code” (*e.g.*, “S01”) and a “location code” (*e.g.*, “R01” or “R02”) that is “incremented from left to right.” Ex. 1003, 4:53-5:11. That is, a first coordinate (the “shelf code”) designates “the shelf of a retail area,” and a second coordinate (the “location code”) designates “the order of the location on this shelf.” *See* Ex. 1001, 8:44-47. Thus, Wu’s disclosure of “locations” is consistent with how the '709 Patent uses the term.

Even if Patent Owner’s wrong construction of the term is applied, Wu discloses representing locations in units that allow distance from a point of reference in the retail area to be determined or, at least, render doing so obvious. Wu discloses obtaining the location code of the electronic shelf label to be installed by performing mathematical processes (extrapolation or interpolation) on the electronic shelf labels which are already installed, such that the location codes are incremented from left to right. Ex. 1003, 5:12-63. Wu specifically notes that mathematical extrapolation can

include “addition or multiplication on the electronic shelf label 110 which is already installed.” *Id.*, 5:7-9. Thus, the distance between Wu’s location codes can be kept constant by introducing decimals resulting from interpolation or extrapolation. *See, e.g.,* Ex. 2026, Dr. Tentzeris’ Depo. Tr. 23:15-27:14 (“[M]athematical extrapolation has to depend on an independent variable. And given this independent variable is declared in line 9 saying, the location codes increment from left to right, my testimony is that the mathematical extrapolation will have to do with distance, which is the independent variable in this case.”); *Id.*, 32:17-24 (“[T]he interpolation method necessarily involves measurement of relative distance between the labels as the mathematical interpolation necessarily and inherently uses such distance as input...Terms like ‘interpolation’ and ‘extrapolation’ mathematically are much more complex than addition or half summation.”); *Id.*, 33:10-23 (“[M]athematical interpolation correlates the value of a function as a value of some variable...the only variable in the location code of these shelf labels they are correlated is the position on the shelf. There is no other independent variable that could be utilized performing a mathematical interpolation in this case.”). In this way, Wu’s location codes can be considered units that allow distance from a point of reference in the retail area to be determined. Alternatively, a POSITA could extrapolate or interpolate from locations represented by a measured distance from a reference point expressed in another obvious unit (*e.g.*, centimeters).

Patent Owner's proposed construction of "location" should be rejected, and Wu discloses representing locations even under Patent Owner limited construction or, at least, renders doing so obvious. The Board correctly found that "the showing in the Petition as to the 'location' elements...is more than sufficient..." Paper 14, 26.

2. Wu Discloses the "Planogram" of the '709 Patent.

Patent Owner wrongfully asserts that Wu does not disclose a "planogram" because Wu fails to disclose "locations" and Wu's label content table does not include a planogram as the term is generally understood. Paper 26, 37-42. As discussed above, Wu discloses "locations" consistent with the '709 Patent even if taking Patent Owner's limited construction. Further, as discussed, the '709 Patent expressly defined "planogram" as "a set of association data among articles of a retail area and locations of said retail area." *See infra*, Section II.B. Patent Owner notes that Wu's label content table includes at least "two pieces of information (1) 'label displaying information' that identifies the *product* associated with each label; and (2) 'label location information' made up of so-called 'label *location*' codes." Paper 26, 38 (citing Ex. 1003, FIG. 5C, 3:16-31). Wu's label content table also records a *relationship* between label location information and label displaying information. Ex. 1003, 1:64-67, 10:49-52. Therefore, Wu discloses a planogram (label content

table) that is a set of association data (relationship) among articles of a retail area (products) and locations of said retail area (label location codes).

Despite that a clear definition is provided by the '709 Patent, Patent Owner relies on extrinsic references to argue that a planogram must include more information. Paper 26, 20-29, 39. For example, Patent Owner argues that “without specifying a location of [Wu’s] shelves, or how each shelf is positioned relative to one another” product placement cannot be planned. But, as discussed above, a planogram *is* a plan, not necessarily a panacea for planning. A planogram need not include every piece of information that might be useful. A plan to place certain products in a certain order on a given shelf is a plan. Moreover, the argument imputes an utter lack of any assistive knowledge to a planogram’s user and ignores that shelves are often numbered in retail areas and signage is included to indicate where shelves are located relative to one another.

Further, even under the wrong construction, Patent Owner faults Wu’s label content table for not including additional pieces of information that it does include. *Id.*, 40. “[I]nformation as to how products are grouped,” is included as the identity of adjacent products in Wu’s label content table. For example, products with the same shelf code are grouped on the same shelf. Information about “where those products are located” is included as label location information in Wu’s label content table. As explained in section II.B., expressly displaying the extent of shelf space

each product is provided is not required for a planogram. Regardless, Wu's label content table implicitly includes information about how much shelf space each product is provided as this is a function of how many products are placed on a given shelf and each product on a shelf will be associated with the same shelf code. Further, it would have been obvious to include such information, as described in Ground 3 of the Petition. Paper 2, 75-76 (explaining that it would have been obvious to include "geometrical information such as the characteristic dimensions of the locations associated with shelf labels").

The Board was right to conclude that "Wu's label content table 122 appears to be the claimed planogram." Paper 14, 15.

3. Wu Discloses a Reading Device that Acquires and Transmits a Sequence of Label Identifiers

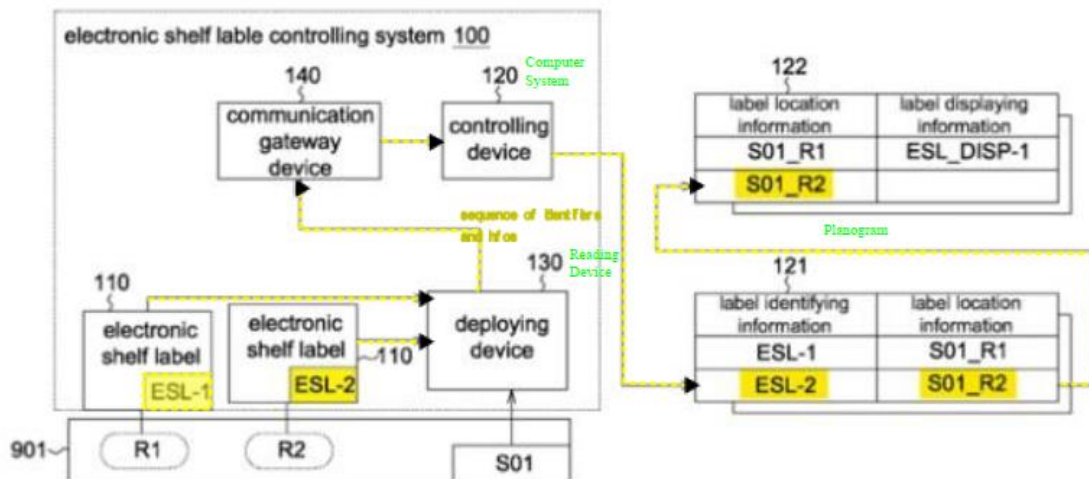
Patent Owner contends that Wu does not disclose a reading device that acquires and transmits the "sequence of label identifiers." Paper 26, 43-51. Specifically, Patent Owner interprets "sequence of label identifiers" as "including at least a label identifier of 'an added shelf label' (e.g., a new label to be added to a shelf) and a label identifier of an 'adjacent shelf label' (e.g., an existing label already installed on the shelf)." Paper 26, 43.

Patent Owner does not contest that Wu discloses the acquisition and transmission, by a reading device, of one label identifier. *Id.*, 46. So it is undisputed that Wu discloses (1) a reading device that is capable of obtaining a label identifier

and (2) a label location table that stores label location information within the memory of a controlling device. Ex. 1003, (57). Further, Patent Owner recognizes that Wu teaches acquiring “‘label location’ codes of an existing shelf label” as a reference from which to extrapolate the location of an added ESL. *Id.*, 47 (citing Ex. 1003, 4:9-25). It would be obvious to use the reading device to acquire a second label identifier in order to obtain the referential label location code of an existing shelf label. Notably, Patent Owner and its expert do not argue that it would not have been obvious.

Although acknowledging that Wu needs “the existing ‘label location’ code” to provide “the necessary information to generate the ‘label location’ code for the new shelf label,” Patent Owner alleges that “acquiring a label identifier of an existing shelf label is not necessary for Wu to add a new shelf label.” *Id.*, 46, 48. However, Patent Owner provides no evidence that (1) the shelf labels of Wu store label location codes or (2) that the reading device of Wu can acquire label location codes directly from a shelf label without acquiring its label identifier. Instead, Patent Owner points to the label location table of Wu and claims that “[l]abel identifier information need not be acquired and transmitted by a reader device during Wu’s process, because Wu’s controlling device (e.g., network server) can retrieve that information from the label location table on the basis of the acquired label location information.” *Id.*, 50. Such argument reverses cause and effect. The purpose of retrieving the label

identifying information of an adjacent label is to create a label location code for an added label. FIG. 3B of Wu illustrates informational flow from two shelf labels to a reading device, indicating that label identifying information, “ESL-1”, of an adjacent label is acquired in addition to the label identifying information, “ESL-2”, of the added shelf label. *See id.*, FIG. 3, 4:53-59. If, as Patent Owner contends, Wu's controlling device creates a location code for an added shelf label without acquiring any information from an adjacent shelf label, the arrow from ESL-1 to the deploying device representing the acquisition and transfer of information would not have been drawn and the system would be unworkable.

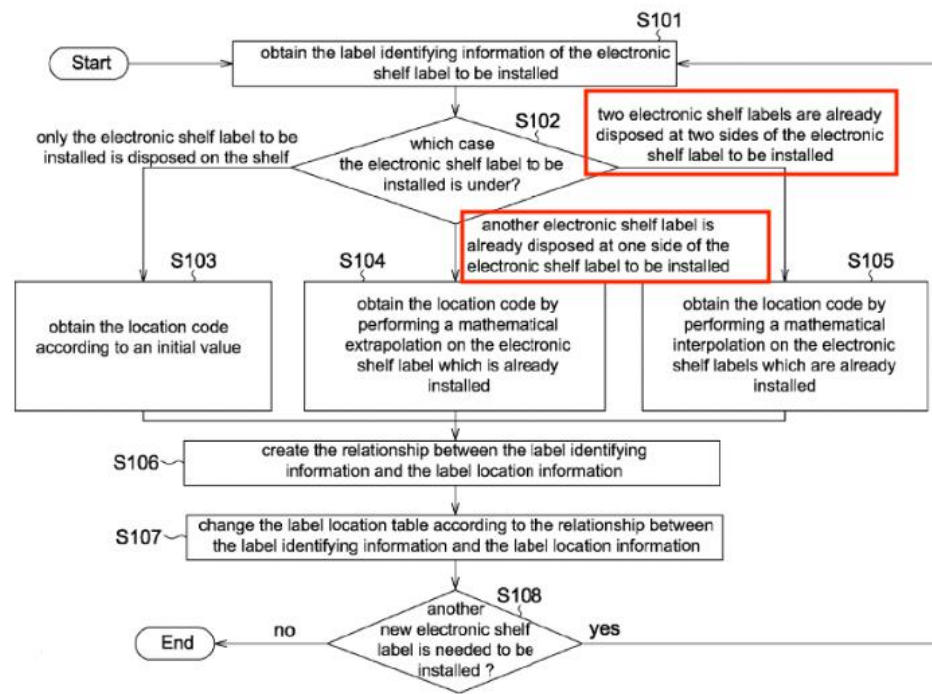


Ex. 1003, FIG. 3B (annotated)

Figures 4A and 4B further clarify that, even if a label location code for an added shelf label can be created based on information stored in the controlling device, Wu discloses the creation of an identical label location code based on information

acquired from an adjacent shelf label. FIG 4B at S412 (disclosing a step of matching identical label location codes to ensure a shelf label is added at the correct location). The information stored in the label location table must be obtained through other means disclosed by Wu, that is, by a reading device that acquires an identifier and transmits it to a controlling device that associates a location code with that identifier. *See* Paper 2, 16-17.

Wu also discloses determining whether there are adjacent shelf labels already disposed on the shelf before installation of the added shelf label. Ex. 1003, 3:43-4:8, FIG. 2. In order to determine whether there is an adjacent shelf label in step S102, the deploying device must obtain the label identifying information of an adjacent shelf label. *See id.*, FIG. 2, 3:62-4:8.



Ex. 1003, FIG. 2

B. Ground 2-4

1. Chaves, Itou and Fujiwara Also Disclose or Render Obvious a Reading Device that Acquires and Transmits a Sequence of Label Identifiers

Ground 2 of the Petition established that Wu and Chaves together disclose acquiring or transmitting more than one label identifier. Paper 2, 53-55. Patent Owner contends that “Petitioner’s cited portions of Chaves merely disclose acquiring “location data” or inventory-level data from labels, and not label identifiers.” However, the Petition makes clear that the “object location data” of Chaves ““may include multiple entries...that include location information for items’ and ‘an item *identifier*.’” Paper 2, 54 (citing Ex. 1006, [0038], FIG. 1B). Thus, Chaves, together with Wu, discloses acquiring or transmitting a sequence of label identifiers.

Ground 3 of the Petition established that Wu, together with Itou and Auclair, disclose acquiring or transmitting more than one label identifier. Paper 2, 70-71. Specifically, Itou discloses acquiring and transmitting a sequence of label identifiers. Patent Owner contends that Itou only *acquires* and *processes* label identifiers, neglecting that paragraph 55 of Itou, as cited by Patent Owner, discloses the case “where the information processing apparatus 2000 *acquires* the target image or the

relation information from the external apparatus,” and “the computer 5000 *transmits* and receives data to and from an external apparatus.” Paper 26, 52 (citing Ex. 1004, [0055]). Therefore, Itou discloses acquiring and transmitting an image that includes a sequence of label identifiers.

Patent Owner also asserts that there is no motivation to combine Itou's teaching of acquiring and transmitting multiple label identifiers with Wu's procedures for generating location information for a new shelf label. Paper 26, 52-55. However, as noted by Patent Owner, the Petition provides various motivations to combine Wu with Itou, including but not limited to “realiz[ing] the advantages of simplified and streamlined communications” and “[being] more efficient and error-resistant than assembling multiple separately acquired or transmitted label.” Paper 26, 53-54 (citing Paper 2, 60-61). Moreover, the Petition provides that because “Wu already discloses acquiring, by a reading device, label identifiers of a label to be added as well as of at least one adjacent label, and transmitting these label identifiers to the computer system,” implementing Itou's sequential acquisition and transmission in Wu's system and methods would have “yielded no more than predictable results due to the combination of familiar elements in a known way.” Paper 2, 79-80. These are all based on well-reasoned analysis beyond conclusory statements.

Ground 4 of the Petition established that Wu and Fujiwara together disclose acquiring or transmitting more than one label identifier. Paper 2, 84-87. Patent Owner does not contest that Fujiwara acquires and transmits multiple label identifiers, but claims that “Fujiwara says nothing of acquiring and transmitting a sequence of label identifiers as part of an installation procedure to register a new shelf label relative to one or more existing shelf labels.” Paper 26, 55. However, it is long-standing principle that explicit teaching, suggestion, or motivation is not required to be found in the references themselves. *KSR International Co. v. Teleflex Inc.*, 550 U.S. 398, 127 S. Ct. 1727 (2007). Similar to Ground 3, because both Wu and Fujiwara contains reading device, shelf labels and computer system and discloses acquiring and transmitting more than one label identifier, a POSITA could have applied the known technique of Fujiwara to read collectively a plurality of shelf labels and yield predictable results, thus improving the efficiency and error-resistance of Wu's system. *See Intel Corp. v. PACT XPP Schweiz AG*, 61 F.4th 1373, 1380-81(Fed. Cir. 2023) (finding that both prior art references “address the same problem and that [the secondary reference's] cache was a known way to address that problem is precisely the reason that there's a motivation to combine under KSR and our precedent.”)

2. Itou and Auclair Render Obvious Measuring Displacement between Label Identifiers

Ground 3 of the Petition established that Wu, together with Itou and Auclair, disclose measuring displacement between label identifiers for claims 7, 8, 17 and 18. Patent Owner contends that the Petition fails to “identify a ‘displacement measuring member’ that measures displacement using ‘label identifiers,’ or that measures distance using displacement of the reading device.” Paper 26, 56-60. In advancing its argument, Patent Owner cites paragraph 97 of Itou and alleges that “Itou merely describes calculating the distance using detected coordinates in the picture, without using the label identifiers at all.” Paper 26, 58 (citing Ex. 1004, [0097]). However, in the same paragraph, Itou explicitly links a coordinate with the “center of the electronic shelf label.” Ex. 1004, [0097]. To recognize the electronic shelf label, Itou discloses a shelf label recognition unit that extracts a shelf label ID from the target image. *Id.*, [Abstract]. Thus, Itou teaches measuring displacement using the label identifiers.

Auclair discusses a method of updating a planogram with “geometrical information” such as “the length [a] product occupies.” Ex. 1005, [0037]. A POSITA would recognize that the measurement of length a product occupies is a determination of displacement between adjacent labels. Ex. 1009, ¶248.

Wu discloses that its reading device may be “a smart phone, a tablet PC, or a handheld device.” *Id.*, 3:12-13. A POSITA would understand that “a smartphone

[or] a tablet PC” of Wu, at the time of invention, would have likely included an accelerometer. *See* Ex. 1009, ¶251; *see also* Ex. 1013, 44:20-45:14, 47:11-14 (describing how accelerometers in phones measure displacement and calculate distance). Therefore, a POSITA would have been motivated based on Auclair to measure the distance between labels, as disclosed by Itou, to provide valuable guidance on the utilization ratio of shelves and facilitate inventory management. Paper 2, 81-82. Because Wu expressly discloses steps of mathematical interpolation and extrapolation, implementing the quantitative measurements of Itou and Auclair would have yielded no more than predictable results. *Id.*, 82.

Therefore, Wu, together with Itou and Auclair, at least render obvious measuring displacement between label identifiers for claims 7, 8, 17 and 18.

IV. DR. TENTZERIS' TESTIMONY SHOULD BE GIVEN DUE WEIGHT

Patent Owner asserts that Dr. Tentzeris' declaration “entitled to minimal weight” because it “merely rehashes the petition without providing any additional factual report.” Paper 26, 60-64. In particular, Patent Owner alleges that the declaration merely offered *conclusory* opinions “without any additional elaboration or factual support.” Paper 26, 48-49 (citing *Xerox Corp. v. Bytemark, Inc.*, IPR2022-00624, Paper 12, 15 (Feb. 10, 2023)). However, as with other cases cited by Patent Owner, the Board in *Xerox* gave little weight to Petitioner's expert “because the expert declaration merely offered *conclusory assertions* without underlying factual

support and repeated, *verbatim, Petitioner's conclusory arguments.*” *Id.* (emphasis added). In other words, the Board gave little credit to conclusory opinions used to support conclusory arguments in the Petition.

Here, Patent Owner has not shown that the entirety of Dr. Tentzeris' declaration is conclusory, but takes the unreasonable position that any expert testimony that is similarly worded as the argument in the Petition is entitled to little weight. However, it is well established that a petition must contain a “full statement of the reasons for the relief requested, including a detailed explanation of the significance of the evidence...” 37 C.F.R. § 42.22(a)(2). In particular, the Board prohibits incorporating by reference arguments and has determined that the “practice of citing the [expert's] Declaration to support conclusory statements that are not otherwise supported in the Petition also amounts to incorporation by reference.” *Cisco Systems, Inc. v. C-Cation Techs., LLC*, IPR2014-00454, Paper 12 at 9 (Aug. 29, 2014). Thus, petitions and expert declarations should fairly well match up in substance and length.

Dr. Tentzeris was retained before the petition was submitted and consulted throughout the writing process. *See* Ex. 2026, Dr. Tentzeris Depo. Tr. 41:11-42:7 (noting that he was retained in late 2022 and formed his opinion on prior art he either chose or collected). As such, concordance is the result of such collaboration and the petition, at times, repeats Dr. Tentzeris' opinions.

By itself, Dr. Tentzeris' declaration cites to factual support from prior art throughout and provides additional explanations on how they meet the limitations of the claims. For example, although Patent Owner reproduces paragraph 80 of Dr. Tentzeris' declaration and argues that it replicated the Petition, an examination of the paragraphs immediately before and after shows citation to the record and the basis for Dr. Tentzeris' testimony. *See* Ex. 1009, ¶¶ 79, 81 (citing Ex. 1003, FIG. 3B, 3:59-61, 3:36-42, 4:9-28, 4:38-43). Similarly, other sections of Dr. Tentzeris' declaration quoted by Patent Owner include the factual basis for his opinions. *See id.*, ¶ 113 (reproducing Ex. 1003, FIG. 3B with annotation); *Id.*, ¶123 (citing Ex. 1003, 3:32-35). Therefore, there is no basis to disregard the entirety of Dr. Tentzeris' declaration. *See PLR Worldwide Sales Ltd. v. Flip Phone Games Inc.*, IPR2024-00209, Paper 9, 19-20 (May 10, 2024). Dr. Tentzeris's declaration should be given due weight.

V. CONCLUSION

For at least the above reasons, Petitioner respectfully requests that the Board cancel claims 1-20.

Date: December 2, 2024

Respectfully submitted,

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CERTIFICATE OF WORD COUNT

I hereby certify that the foregoing PETITIONER'S REPLY includes 5,596 words (as calculated by Microsoft Word), excluding those in the table of contents, table of authorities, list of exhibits, mandatory notices, signatures, certificate of word count, and certificate of service. Accordingly, this Petitioner's Reply is under the word count limit of 5,600 words.

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CERTIFICATE OF SERVICE

Pursuant to 37 C.F.R. § 42.6(e), I hereby certify that, on December 2, 2024, a set of true and correct copies of PETITIONER'S REPLY and supporting materials has been served via e-mail and UPS to the Patent Owner by serving the below-listed attorneys of record for Patent Owner in the concurrent proceeding:

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