

IPR2024-01045

Patent Owner's Preliminary Response

**UNITED STATES PATENT AND TRADEMARK OFFICE**

**BEFORE THE PATENT TRIAL AND APPEAL BOARD**

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VUSIONGROUP SA,

Petitioner

v.

HANSHOW TECHNOLOGY CO., LTD.,

Patent Owner

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Case No.: IPR2024-01045

Patent No. 11,087,272

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**PATENT OWNER'S PRELIMINARY RESPONSE**

**CONTENTS**

|                                                                                                           |    |
|-----------------------------------------------------------------------------------------------------------|----|
| I. INTRODUCTION.....                                                                                      | 1  |
| II. BACKGROUND.....                                                                                       | 2  |
| A. Overview of the '272 Patent.....                                                                       | 2  |
| III. LEVEL OF ORDINARY SKILL .....                                                                        | 4  |
| IV. CLAIM CONSTRUCTION.....                                                                               | 5  |
| V. INSTITUTION SHOULD BE DENIED ON ALL GROUNDS BECAUSE<br>NO GROUND RENDERS CLAIM 1 OBVIOUS.....          | 7  |
| A. Ground 1 Does not Render Claim 1 Obvious .....                                                         | 7  |
| 1. Schwartz does not qualify as prior art. ....                                                           | 7  |
| 2. Schwartz is not entitled to the priority date of the '899 provisional<br>application. ....             | 11 |
| 3. The Identified Components of Schwartz and Katircioglu Fail To<br>Meet Specific Claim Requirements..... | 13 |
| B. Ground 3 Does not Render Claim 1 Obvious .....                                                         | 25 |
| C. Grounds 2 and 4 Do not Render Claim 1 Obvious .....                                                    | 32 |
| VI. THE BOARD SHOULD EXERCISE ITS DISCRETION AND DENY<br>INSTITUTION.....                                 | 33 |
| VII. THERE IS NO GOOD CAUSE FOR A PRE-INSTITUTION REPLY .....                                             | 34 |
| VIII. CONCLUSION.....                                                                                     | 34 |

**Claim List<sup>1</sup>**

| <b>Claim 1</b>    |                                                                                                                                                                                                                                                                                       |
|-------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Limitation</b> | <b>Text</b>                                                                                                                                                                                                                                                                           |
| [1.0]             | A method comprising:                                                                                                                                                                                                                                                                  |
| [1.1]             | capturing one or more images of a portion of a shelf with a camera;                                                                                                                                                                                                                   |
| [1.2]             | detecting and reading content of a shelf label on the portion of the shelf within the one or more images;                                                                                                                                                                             |
| [1.3]             | defining one or more product facing bounding boxes surrounding one or more corresponding facings of a product within the one or more images;                                                                                                                                          |
| [1.4]             | associating the shelf label content with each of the one or more product facing bounding boxes that includes and defines each of the one or more corresponding product facings;                                                                                                       |
| [1.5]             | cross-correlating the one or more product facing bounding boxes and one or more other product facing bounding boxes across one or more stores by matching the shelf label content with other shelf label content associated with the one or more other product facing bounding boxes; |
| [1.6]             | building training data based on the association of the shelf label content with the cross-correlated product facing bounding boxes;                                                                                                                                                   |
| [1.7]             | using the training data to build a product classifier; and                                                                                                                                                                                                                            |
| [1.8]             | using the product classifier to classify an item as the product.                                                                                                                                                                                                                      |

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<sup>1</sup> For convenience purposes only, Patent Owner adopt for this Preliminary Response the numbering of claim limitations advanced by Petitioner in the Petition (Paper 2). Patent Owner does not concede the appropriateness of such grouping and numbering of claim limitations.

| <b>Claim 2</b>    |                                                                                                                                                                                                                                                       |
|-------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Limitation</b> | <b>Text</b>                                                                                                                                                                                                                                           |
| [2]               | The method of claim 1, wherein capturing one or more images comprises capturing the one or more images with a camera attached to a moveable robot.                                                                                                    |
| <b>Claim 3</b>    |                                                                                                                                                                                                                                                       |
| <b>Limitation</b> | <b>Text</b>                                                                                                                                                                                                                                           |
| [3]               | The method of claim 1, further comprising using manual input to identify potential inventory designated in the one or more product facing bounding boxes.                                                                                             |
| <b>Claim 4</b>    |                                                                                                                                                                                                                                                       |
| <b>Limitation</b> | <b>Text</b>                                                                                                                                                                                                                                           |
| [4]               | The method of claim 1, wherein using the training data to build a product classifier comprises integrating training to: (1) learn product image descriptors and (2) classify items into a neural network.                                             |
| <b>Claim 5</b>    |                                                                                                                                                                                                                                                       |
| <b>Limitation</b> | <b>Text</b>                                                                                                                                                                                                                                           |
| [5]               | The method of claim 1, wherein associating the shelf label content with each of the one or more product facing bounding boxes comprises manually associating the shelf label content with each of the one or more product facing bounding boxes.      |
| <b>Claim 6</b>    |                                                                                                                                                                                                                                                       |
| <b>Limitation</b> | <b>Text</b>                                                                                                                                                                                                                                           |
| [6]               | The method of claim 1, wherein associating the shelf label content with each of the one or more product facing bounding boxes comprises automatically associating the shelf label content with each of the one or more product facing bounding boxes. |

| <b>Claim 7</b>    |                                                                                                                                                                                                                                                                                     |
|-------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Limitation</b> | <b>Text</b>                                                                                                                                                                                                                                                                         |
| [7.0]             | The method of claim 1, wherein capturing one or more images of a portion of a shelf comprises capturing one or more images of a portion of a shelf in a first store; and further comprising:                                                                                        |
| [7.1.1]           | capturing one or more further images of portion of another shelf in a second store;                                                                                                                                                                                                 |
| [7.1.2]           | reading content of another shelf label on the portion of the other shelf within the one or more further images;                                                                                                                                                                     |
| [7.1.3]           | defining one or more other product facing bounding boxes surrounding one or more other corresponding facings of another product within the one or more further images; and                                                                                                          |
| [7.1.4]           | associating the other shelf label content with each of the one or more other product facing bounding boxes that includes and defines each of the one or more other corresponding product facings;                                                                                   |
| [7.2]             | wherein cross-correlating comprises cross-correlating the one or more product facing bounding boxes and the one or more other product facing bounding boxes across the first store and the second store by matching the shelf label content with the other shelf label content; and |
| [7.3]             | wherein building training data comprises building the training data based on the association of the shelf label content and the other shelf label content with the cross-correlated product facing bounding boxes correlated across the first store and the second store.           |
| <b>Claim 8</b>    |                                                                                                                                                                                                                                                                                     |
| <b>Limitation</b> | <b>Text</b>                                                                                                                                                                                                                                                                         |
| [8]               | The method of claim 7, wherein capturing one or more further images comprises capturing the one or more further images subsequent to capturing the one or more images.                                                                                                              |

| <b>Claim 9</b>    |                                                                                                                                                                                                                                                                                       |
|-------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Limitation</b> | <b>Text</b>                                                                                                                                                                                                                                                                           |
| [9]               | The method of claim 7, wherein capturing one or more further images comprises capturing the one or more further images prior to capturing the one or more images.                                                                                                                     |
| <b>Claim 10</b>   |                                                                                                                                                                                                                                                                                       |
| <b>Limitation</b> | <b>Text</b>                                                                                                                                                                                                                                                                           |
| [10.0]            | A method comprising:                                                                                                                                                                                                                                                                  |
| [10.1]            | capturing one or more images of a portion of a shelf with a camera;                                                                                                                                                                                                                   |
| [10.2]            | detecting and reading content of a shelf label on the portion of the shelf within the one or more images;                                                                                                                                                                             |
| [10.3]            | defining one or more product facing bounding boxes surrounding one or more facings of a product within the one or more images;                                                                                                                                                        |
| [10.4]            | associating the shelf label content with each of the one or more product facing bounding boxes that includes and defines each of the one or more corresponding product facings;                                                                                                       |
| [10.5]            | cross-correlating the one or more product facing bounding boxes and one or more other product facing bounding boxes across one or more stores by matching the shelf label content with other shelf label content associated with the one or more other product facing bounding boxes; |
| [10.6]            | building training data based on the association of the shelf label content with the cross-correlated product facing bounding boxes;                                                                                                                                                   |
| [10.7]            | using the training data to build a product classifier; and                                                                                                                                                                                                                            |
| [10.8]            | using the product classifier to perform an inventory management activity related to the product.                                                                                                                                                                                      |
| <b>Claim 11</b>   |                                                                                                                                                                                                                                                                                       |

| <b>Limitation</b> | <b>Text</b>                                                                                                                                                                                                                                                                         |
|-------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| [11.0]            | The method of claim 10, wherein capturing one or more images of a portion of a shelf comprises capturing one or more images of a portion of a shelf in a first store; and further comprising:                                                                                       |
| [11.1.1]          | capturing one or more further images of a portion of another shelf in a second store;                                                                                                                                                                                               |
| [11.1.2]          | reading content of another shelf label on the portion of the other shelf within the one or more further images;                                                                                                                                                                     |
| [11.1.3]          | defining one or more other product facing bounding boxes surrounding one or more other corresponding facings of another product within the one or more further images; and                                                                                                          |
| [11.1.4]          | associating the other shelf label content with each of the one or more other product facing bounding boxes that includes and defines each of the one or more other corresponding product facings;                                                                                   |
| [11.2]            | wherein cross-correlating comprises cross-correlating the one or more product facing bounding boxes and the one or more other product facing bounding boxes across the first store and the second store by matching the shelf label content with the other shelf label content; and |
| [11.3]            | wherein building a training data comprises building the training data set based on the association of the shelf label content and the other shelf label content with the cross-correlated product facing bounding boxes correlated across the first store and the second store.     |
| <b>Claim 12</b>   |                                                                                                                                                                                                                                                                                     |
| <b>Limitation</b> | <b>Text</b>                                                                                                                                                                                                                                                                         |
| [12]              | The method of claim 11, wherein capturing one or more further images comprises capturing the one or more further subsequent to capturing the one or more images.                                                                                                                    |

| <b>Claim 13</b>   |                                                                                                                                                                                                                                                        |
|-------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Limitation</b> | <b>Text</b>                                                                                                                                                                                                                                            |
| [13]              | The method of claim 11, wherein capturing one or more further images comprises capturing the one or more further images prior to capturing the one or more images.                                                                                     |
| <b>Claim 14</b>   |                                                                                                                                                                                                                                                        |
| <b>Limitation</b> | <b>Text</b>                                                                                                                                                                                                                                            |
| [14]              | The method of claim 10, wherein capturing one or more images of a portion of a shelf with a camera comprises capturing the one or more images with a camera attached to a moveable robot.                                                              |
| <b>Claim 15</b>   |                                                                                                                                                                                                                                                        |
| <b>Limitation</b> | <b>Text</b>                                                                                                                                                                                                                                            |
| [15]              | The method of claim 10, further comprising using manual input to identify potential inventory designated in the one or more bounding boxes.                                                                                                            |
| <b>Claim 16</b>   |                                                                                                                                                                                                                                                        |
| <b>Limitation</b> | <b>Text</b>                                                                                                                                                                                                                                            |
| [16]              | The method of claim 10, wherein the one or more bounding boxes surround gaps between potential inventory.                                                                                                                                              |
| <b>Claim 17</b>   |                                                                                                                                                                                                                                                        |
| <b>Limitation</b> | <b>Text</b>                                                                                                                                                                                                                                            |
| [17]              | The method of claim 10, wherein associating the shelf label content with each of the one or more product facing bounding boxes comprises automatically associating the shelf label content with each of the one or more product facing bounding boxes. |
| <b>Claim 18</b>   |                                                                                                                                                                                                                                                        |

| <b>Limitation</b> | <b>Text</b>                                                                                                                                                                                                                                                                         |
|-------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| [18.0]            | A system comprising:                                                                                                                                                                                                                                                                |
| [18.1]            | a processor;                                                                                                                                                                                                                                                                        |
| [18.2]            | system memory coupled to the processor and storing instructions configured to cause the processor to:                                                                                                                                                                               |
| [18.3]            | capture one or more images of a portion of a shelf with a camera;                                                                                                                                                                                                                   |
| [18.4]            | detect and reading content of a shelf label on the portion of the shelf within the one or more images;                                                                                                                                                                              |
| [18.5]            | define one or more product facing bounding boxes that surround an surrounding one or more corresponding facings of a product within the one or more images;                                                                                                                         |
| [18.6]            | associate the shelf label content with each of the one or more product facing bounding boxes that includes and defines each of the one or more corresponding product facings;                                                                                                       |
| [18.7]            | cross-correlate the one or more product facing bounding boxes and one or more other product facing bounding boxes across one or more stores by matching the shelf label content with other shelf label content associated with the one or more other product facing bounding boxes; |
| [18.8]            | build training data based on the association of the shelf label content with the cross-correlated product facing bounding boxes;                                                                                                                                                    |
| [18.9]            | use the training data to build a product classifier; and                                                                                                                                                                                                                            |
| [18.10]           | use the product classifier to perform one or more of: (1) an inventory management activity related to the product or (2) classifying an item as the product.                                                                                                                        |
| <b>Claim 19</b>   |                                                                                                                                                                                                                                                                                     |
| <b>Limitation</b> | <b>Text</b>                                                                                                                                                                                                                                                                         |

|                   |                                                                                                                                                                                                                                                                                                           |
|-------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| [19.0]            | The system of claim 18, wherein instructions configured to capture one or more images of a portion of a shelf comprise instructions configured to capture one or more images of a portion of a shelf in a first store; and further comprising instructions configured to:                                 |
| [19.1.1]          | capture one or more further images of a portion of another shelf in a second store;                                                                                                                                                                                                                       |
| [19.1.2]          | read content of another shelf label on a portion of the other shelf within the one or more further images;                                                                                                                                                                                                |
| [19.1.3]          | define one or more other product facing bounding boxes surrounding one or more other corresponding facings of another product within the one or more further images; and                                                                                                                                  |
| [19.1.4]          | associate the other shelf label content with each of the one or more other product facing bounding boxes that includes and defines each of the one or more other corresponding product facings;                                                                                                           |
| [19.2]            | wherein instructions configured to cross-correlate the one or more product facing bounding boxes and the one or more other product facing bounding boxes across the first store and the second store by matching the shelf label content with the other shelf label content; and                          |
| [19.3]            | wherein instructions configured to build a training data comprising building the training data sent based on the association of the shelf label content and the other shelf label content with the cross-correlated product facing bounding boxes correlated across the first store and the second store. |
| <b>Claim 20</b>   |                                                                                                                                                                                                                                                                                                           |
| <b>Limitation</b> | <b>Text</b>                                                                                                                                                                                                                                                                                               |
| [20]              | The system of claim 18, wherein instructions configured to capture one or more further images comprise instructions configured to capture the one or more further images subsequent to capturing the one or more images.                                                                                  |

| Claim 21   |                                                                                                                                                                                                         |
|------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Limitation | Text                                                                                                                                                                                                    |
| [21]       | The system of claim 18, wherein instructions configured to capture one or more further images of another portion of a shelf comprise instructions configured to capture the one or more further images. |

**Exhibit List**

| <b>Exhibit Number</b> | <b>Description</b>                                                                                                                                                                                                          |
|-----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 2001                  | Amended Docket Control Order (Dkt. 48), case 2:23-cv-00617-RWS-RSP in the United States District Court for the Eastern District of Texas, Marshall Division                                                                 |
| 2002                  | Jacob E. D. Levman, <i>The Support Vector Machine in Medical Imaging</i> , in Brandon H. Boyle (Ed.), <i>Support Vector Machines: Data Analysis, Machine Learning and Applications</i> , Nova Science Publishers 2011, at 2 |
| 2003                  | Vojislav Kecman, <i>Support Vector Machine - an Introduction</i> , StudFuzz 177, 1-47 (2005)                                                                                                                                |

## **I. INTRODUCTION**

Petitioner VusionGroup SA (“Petitioner” or “Vusiongroup”) challenges the patentability of claims 1-21 (of which claims 1, 10 and 18 are independent) of U.S. Patent No. 11,087,272 (Ex. 1001, “the ’272 Patent”). Petitioner argues that prior art Schwartz (Ex. 1005), Katircioglu (Ex. 1007), Avegliano430 (Ex. 1008), Avegliano157 (Ex. 1009), and Rodriguez (Ex. 1010) in various combinations render claims 1-21 obvious. In particular, Petitioner argues that Schwartz, in combination with Katircioglu, renders independent claims 1, 10 and 18 obvious. Petitioner also argues that Avegliano157, in combination with Rodriguez, renders independent claims 1, 10 and 18 obvious. Petitioner did not use Avegliano430 for any of its arguments related to independent claims 1, 10 and 18.

Petitioner fails to establish a reasonable likelihood that any claim of the ’272 Patent is unpatentable. At least, Petitioner fails to show that either Schwartz in combination with Katircioglu or Avegliano157 in combination with Rodriguez discloses or renders obvious the recited “cross-correlating the one or more product facing bounding boxes and one or more other product facing bounding boxes across one or more stores by matching the shelf label content with other shelf label content associated with the one or more other product facing bounding boxes” or “building training data based on the association of the shelf label content with the cross-correlated product facing bounding boxes” required by all challenged claims (e.g.,

[1.5], [1.6], [10.5], [10.6], [18.7], [18.8]). Because of this failure by Petitioner to meet the statutory threshold, the Board should deny institution. 35 U.S.C. § 314(a).

## **II. BACKGROUND**

### **A. Overview of the '272 Patent**

Before the inventory monitoring solutions claimed in the '272 Patent, prior art solutions generally relied on planograms (lists or diagrams that show how and where specific products should be placed on shelves or displays) in combination with machine vision technology. *Id.* at 1:37-40. These prior art solutions use cameras to check gaps in shelf space against an established planogram of that shelf space, and flag items as “out of stock” if necessary. *Id.* at 1:42-46. However, building the initial planogram, which includes detailed information like product identification, placement, and count, is both expensive and requires significant human intervention. *Id.* at 1:47-51. Similarly, keeping the planogram updated and searching for any potentially misplaced product inventory also require significant human intervention. *Id.* at 1:51-53.

The '272 Patent addresses the issues with the prior art planogram solutions and provides a low cost, accurate, and scalable solution, using an innovative multiple camera sensor suite capable of accurately monitoring retail or warehouse product inventory without needing an initial planogram. Ex. 1001, at 1:17-20. The '272 Patent's inventory monitoring camera system can be used for detecting shelf labels;

defining a product bounding box; associating the bounding box to a shelf label to build training data set; and using the training data set to train a product classifier. *Id.* at 1:65-2:3.

The '272 Patent discloses that shelf labels are detected either in individual shelf images or in a stitched panorama, and each shelf label is analyzed to obtain one or more product identifiers. *Id.* at 11:2-4, 7-8. Then, bounding boxes, which are perimeters enclosing one or more multiple facings of the same product, or any space on the shelf including but not limited to a gap between products, are defined. *Id.* at 11:31-34. Next, each bounding box is consistently associated with a product identifier based on a label location heuristic. The identifier can be selected to originate from either the left or the right shelf label. *Id.* at 12:8-11. The association of bounding boxes and identifiers can further be refined through optimization across an entire shelf section or aisle. *Id.* at 12:11-13. The bounding boxes, with identifiers, can be registered to a simple or panoramic stitched image of the shelf. *Id.* at 12:13-17. Image descriptors can be extracted by using the bounding boxes as labeled categories and training classifiers, which may include those based on deep structured learning, hierarchical learning, deep machine learning, or other suitable deep learning algorithms associated with convolutional, feedforward, recurrent, or other suitable neural network, on the images contained in the bounding boxes. *Id.* at 12:24-26.

A deep learning based classifier can automatically learn image descriptors based on an annotated training data. *Id.* at 12:30-32. Then, the image descriptors can be classified and labelled with the identifier, using classification algorithms including but not limited to support vector machine. *Id.* at 12:44-46. This process can be repeated for every image of the bounding box associated to the same identifier, whether the image is captured in the same store at different times, or in different stores. In time, this allows for a product library to be automatically built without requiring an initial planogram or storage of specific product databases. *Id.* at 12:46-52. The automatically learned features, which are extracted from different layers of the convolutional neural network, can be used in a larger product recognition system. *Id.* at 12:55-58.

Thus, unlike the prior art, the '272 Patent discloses an inventory monitoring camera system that associates product facing bounding boxes to other shelf labels to build training data set and uses the training data set to train product classifiers, which allows for automatically building a product library without requiring an initial planogram or storage of specific product database.

### **III. LEVEL OF ORDINARY SKILL**

For the purposes of this Preliminary Response only, Patent Owner agrees with Petitioner that a person of ordinary skill in the art ("POSITA") as of the priority date of the '272 Patent (March 2016) would have had a bachelor's degree in electrical

engineering, computer engineering, computer science, or a related field, and two or more years of work experience or research related to computer vision, image analytics, machine learning, artificial intelligence or automated object recognition methods and systems, or equivalent training and work experience in the field, and formal education can substitute for work experience and relevant work experience could substitute for formal education. *See* Paper 2, at 8-9. Patent Owner reserves all rights to raise a different level of ordinary skill in subsequent filings (if any) in this proceeding, as well as in other forums.

#### **IV. CLAIM CONSTRUCTION**

For the purposes of this Preliminary Response only, Patent Owner believes that no claim constructions are necessary and the claims should be given their plain and ordinary meanings. Patent Owner reserves all rights to raise claim construction arguments in subsequent filings (if any) in this proceeding, as well as in other forums.

Petitioner argues that the terms “processor” and “product classifier” are indefinite for lack of sufficient structure but contends that the Board can still address their unpatentability over the prior art. Paper 2, at 9-10, footnote 4. Petitioner’s argument makes no sense, however, not only because it is well-established that indefiniteness cannot be raised as a ground in an *inter partes* review, but also because “a claim cannot be both indefinite and anticipated.” *Enzo Biochem, Inc. v. Applera Corp.*, 599 F.3d 1325, 1332 (Fed. Cir. 2010); *see also Ebates Performance*

*Marketing, Inc. d/b/a Rakuten Rewards v. International Business Machines Corp.*,

IPR 2022-00439, Paper 11 (P.T.A.B. Oct. 3, 2022) (denying institution when the petitioner took inconsistent positions regarding indefiniteness and obviousness).

Petitioner further argues that the terms “processor” and “product classifier” should be construed as means-plus-function terms. However, as Petitioner itself admits, “[b]ecause no claim terms in the Challenged Claims use the term ‘means,’ there is a rebuttable presumption that §112(f) does not apply.” Paper 2, at 9. Thus, Petitioner bears the burden of going forward with evidence to rebut this presumption. *Apex Inc. v. Raritan Comput., Inc.*, 325 F.3d 1364, 1372 (Fed. Cir. 2003). This burden must be met by a preponderance of the evidence. *Id.* Yet, despite its admission, Petitioner advanced no argument whatsoever to rebut this presumption. Instead, Petitioner simply presented its further contentions with the qualifier “[i]f the Board finds the presumption is overcome for the ‘processor’ and ‘product classifier’ limitations.” Paper 2, at 9.

“If the party who must bring forth evidence fails to proffer sufficient evidence to meet its burden, the presumption, either for or against the application of § 112, P6, prevails.” *Apex*, 325 F.3d at 1372. Here, Petitioner fails to offer *any* evidence to meet its burden. Thus, the presumption prevails and Petitioner’s argument for means-plus-function constructions of these two terms fails.

Accordingly, all the claims of the '272 Patent should be given their plain and ordinary meanings.

**V. INSTITUTION SHOULD BE DENIED ON ALL GROUNDS BECAUSE NO GROUND RENDERS CLAIM 1 OBVIOUS**

The Board should deny institution under 35 U.S.C. § 314(a) because the Petition does not demonstrate a reasonable likelihood that any challenged claim is unpatentable. In particular, no ground renders independent claim 1 obvious. Because the Petition does not advance separate obviousness arguments against independent claims 10 and 18, relying instead on the obviousness arguments against claim 1 for these claims (*see* Paper 2, at 40-43, 86-89), no ground renders independent claims 10 and 18 obvious either. Because no ground renders any of the independent claims obvious, *a fortiori* no ground renders any of the dependent claims obvious. *See In re Fine*, 837 F.2d 1071, 1076 (Fed. Cir. 1988) (“Dependent claims are nonobvious under section 103 if the independent claims from which they depend are nonobvious.”).

**A. Ground 1 Does not Render Claim 1 Obvious**

**1. Schwartz does not qualify as prior art.**

Ground 1 does not render Claim 1 obvious because Schwartz does not qualify as prior art.

**a. The '272 patent is entitled to the priority date of the '785 provisional application.**

In an attempt to alter the priority date of the '272 patent so that Schwartz may become prior art, Petitioner argues that the '272 patent is not entitled to the priority date of the '785 provisional application because the '785 provisional application does not disclose “building training data based on the ‘association of the shelf label content with the...product facing bounding boxes’” and the “data cross-correlating step” recited in claims 1, 10, and 18. Paper 2, at 7-8. Specifically, Petitioner argues that the '785 provisional application does not mention “training data” and “the algorithms disclosed by '785Provisional use only the images themselves, not the association with the shelf label content.” *Id.* at 7. Petitioner further argues that the '785 provisional application “disclose[s] building a library of products using storewide price tags and labels to an *instant* store rather than cross-correlating *product facing bounding boxes* generated in real-time *across stores*.” *Id.* at 8 (emphasis original). These characterizations are incorrect.

The '785 provisional application discloses a method that “builds automatic correspondences between one or multiple images of a product and the product identifier to enable image-based product recognition.” Ex. 1027, at 8. The application, as part of disclosure of this method, discloses “[d]etect[ing] *shelf labels* either in individual shelf images, or in the stitched panorama” and “[a]nalyzing each *shelf label* to obtain one or more product *identifiers*.” *Id.* (emphasis added). The

application, further as part of disclosure of this method, discloses identifying “horizontal” and “vertical product space,” which is the same as product facing bounding boxes. *Id.* at 8-9. The application then discloses “register[ing] the product space on the stitched image and compute *image descriptors* on the portion of the stitched image corresponding to the *product space (product space image)*” and “classify[ing] the *image descriptors* into F classes and *label them with the identifier.*” *Id.* at 9 (emphasis added). These portions of the ’785 provisional application thus associate the product space images with the shelf label content.

The ’785 provisional application further discloses “[c]lassification algorithms that can be used include but are not limited to *Support Vector Machine.*” *Id.* (emphasis added). A support vector machine requires training data to operate, and the association between the product space images and the shelf label contents as disclosed in ’785 provisional application constitutes the required training data. *See, e.g.,* Ex. 2002, Jacob E. D. Levman, *The Support Vector Machine in Medical Imaging*, in Brandon H. Boyle (Ed.), *Support Vector Machines: Data Analysis, Machine Learning and Applications*, Nova Science Publishers 2011, at 2 (“The support vector machine (SVM) is an established supervised learning technique that creates a boundary separating two groups based on a set of provided training data.”); Ex. 2003, Vojislav Kecman, *Support Vector Machine - an Introduction*, StudFuzz 177, 1-47 (2005), at 2 (“The only information available is a training data set”), 3

(“the data sets contain small number of the training data pairs” ... “the parameters are not predefined and their number depends on the training data used”), and 35 (“as in the case of classification, this will be achieved by training the SVM model on a training data set first”).

Additionally, the '785 provisional application discloses, in various locations, building training data based on the association of product space images with identifiers in shelf labels. *See, e.g.*, Ex. 1027, at 3 (“[t]his method builds automatic correspondences between one or multiple images of a product and the product identifier to enable image-based product recognition”), 5 (“detecting products and labels from a library of product and label information”), 6 (“building a library of product descriptors and their identifiers,” “[e]xtract one set of descriptors from each product image associated to an identifier”).

The '785 provisional application further discloses “[r]epeat[ing] this process for every image of the product space associated to the same identifier, whether the image is captured in the same store at different times, or *in different stores.*” *Id.* at 9 (emphasis added). This clearly refutes Petitioner’s argument that the data only come from one store, and discloses the cross-correlation required by the '272 patent.

The Federal Circuit has previously explained that the priority from the provisional can be established if “the disclosure filed as the provisional application adequately provides (1) a written description of the subject matter of the claim(s) at

issue in the later filed nonprovisional application, and (2) an enabling disclosure to permit one of ordinary skill in the art to make and use the claimed invention in the later filed nonprovisional application without undue experimentation.” *D Three Enters., LLC v. Sunmodo Corp.*, 890 F.3d 1042 (Fed. Cir. 2018) (citing MPEP § 211.05(I)(A)). Here, it is clear that the ’785 provisional application contains a full and clear description of the invention, including “building training data based on the ‘association of the shelf label content with the...product facing bounding boxes’” and the “data cross-correlating step” recited in claims 1, 10, and 18, and enables an ordinarily skilled artisan to practice the invention. Therefore, the ’272 patent is entitled to the priority date of the ’785 provisional application, which is March 29, 2016.

**2. Schwartz is not entitled to the priority date of the ’899 provisional application.**

In addition, Schwartz is not entitled to the priority date argued for by Petitioner. See Paper 2, at 13-14. Petitioner argues that “[t]he cited portions of Schwartz relied upon in Grounds 1-2 are replicated in the Schwartz-Provisional [also known as ’899 provisional application] in all but a few exceptions.” Paper 2, at 14. Yet Petitioner admits that the ’899 provisional application does not contain the disclosures of “Figures 14B, 14C, [0131], [0132], [0134], [0135]” in Schwartz. Paper 2, at 50. Petitioner nevertheless argues that this lack of disclosure is immaterial for the matching between Schwartz and (for example) Claim 1 of the ’272 patent. *Id.*

However, the association between the image and corresponding information, a disclosure essential for the matching of limitations 1.4 and 1.6-1.8, as well as a disclosure of Convolutional Neural Network, according to Petitioner, are only available in these missing disclosures. Paper 2, at 37, 39.

Admitting that disclosures for the matching of limitations 1.4, 1.6-1.8 are missing in Schwartz Provisional, Petitioner's expert points to other references and argues that "it would have been *obvious* to use a UPC code to identify a product," and "training and using classifiers based on image data was well known in the art, even without such disclosure, and would have been *obvious* to use in the combination of Schwartz and Katircioglu." Ex. 1003, at ¶¶204-205. However, obviousness is not the standard for establishing whether Schwartz is entitled to the benefit of its provisional application's filing date for prior art purposes. Instead, Petitioner must "show that the provisional application provides sufficient support for the subject matter relied upon for prior art purposes in the reference patent." *Forescout Technologies, Inc. v. For-net, Inc.*, No. IPR2021-01328, Paper 12 at 8 (PTAB Jan. 27, 2022) (denying institution because the petitioner fails its initial burden to "show that the subject matter that [the petitioner] relies on in [the Primary Reference] is also found in the [Relied-on Provisional]"); see also *In re Giacomini*, 612 F.3d 1380, 1383 (Fed. Cir. 2010) (requiring that the relied upon subject matter

“was carried forward from an earlier U.S. provisional application or U.S. non-provisional application”).

Even accepting Petitioner's priority arguments based on obviousness, they completely omit any discussion of the association between the image and the shelf label content (at best, Petitioner discusses using a UPC to identify a product, which is different from associating the image with the shelf label content). As Petitioner itself argues in a different context (Paper 2, at 7), this association is an essential disclosure. By failing to address this essential disclosure, among others, Petitioner fails to meet its burden to “show that the provisional application provides sufficient support for the subject matter relied upon for prior art purposes in the reference patent.” *Forescout Techs.*, IPR2021-01328, Paper 12 at 8. Therefore, for the purpose of prior art status, Schwartz is not entitled to the date of the '899 provisional application. Instead, its priority date is its own filing date, which is May 25, 2016.

Because Schwartz's effective filing date is after the '272 patent's effective filing date, Schwartz does not qualify as prior art.

### **3. The Identified Components of Schwartz and Katircioglu Fail To Meet Specific Claim Requirements.**

Even if the Board finds that Schwartz qualifies as a prior art, Ground 1 does not render Claim 1 obvious because Petitioner fails to show that Schwartz, in combination with Katircioglu, discloses or renders obvious at least the claimed “detecting and reading content of a shelf label on the portion of the shelf within the

one or more images,” “cross-correlating the one or more product facing bounding boxes and one or more other product facing bounding boxes across one or more stores by matching the shelf label content with other shelf label content associated with the one or more other product facing bounding boxes” or “building training data based on the association of the shelf label content with the cross-correlated product facing bounding boxes” (e.g., limitations [1.2], [1.5], [1.6]).

Petitioner's assertion that “POSITAs would have recognized Schwartz collects and correlates product identification and affiliates shelf label content (e.g., price) information with that of a planogram for a store, and cross-correlates that product and the affiliated shelf label information across stores, store types, and time” is unsupported. Paper 2, at 36. Petitioner cites to paragraphs [0083], [0090], and [0100] of Schwartz, none of which contains any mention of shelf label or its equivalent. Petitioner's expert does not cure this deficiency, which repeats the same conclusory allegation and cites to the same paragraphs. Ex. 1003, at ¶¶148-149. The Board should afford such unsubstantiated testimony little weight in its analysis. See *Vyripharm Enterprises, Inc. v. Metrc LLC*, IPR2021-01015, Paper 7, at 23 (P.T.A.B. Nov. 23, 2021).

Petitioner further argues that “Schwartz's real world ground truth data comprises ‘images with corresponding labels such as *product locations* and *UPCs*...used for algorithm performance evaluation, system validation and testing

and training of matching learning algorithms.’” Paper 2, at 37 (emphasis added).

However, as Petitioner’s own argument summarizes, the “label” of Schwartz is not any shelf label content, but descriptive elements such as product location or UPC (which is included with a product, *see* Ex. 1003, at ¶131). In fact, Schwartz discloses in the same paragraph that “[f]or real world ground truth data, the images are actual scenes where the *labels* must be determined. While algorithms may assist in generating ground truth data, humans make final decisions about what the *true labels* are. In contrast to real world ground truth, for synthetic ground truth created using models and computer graphics, the *true labels* are known as part of the creation process.” Ex. 1005, at [0134] (emphasis added). A POSITA would thus understand that the “labels” of Schwartz are “labels” in the sense of machine learning, that is, they are descriptive elements that provide context or categorization for product image data, not shelf labels.

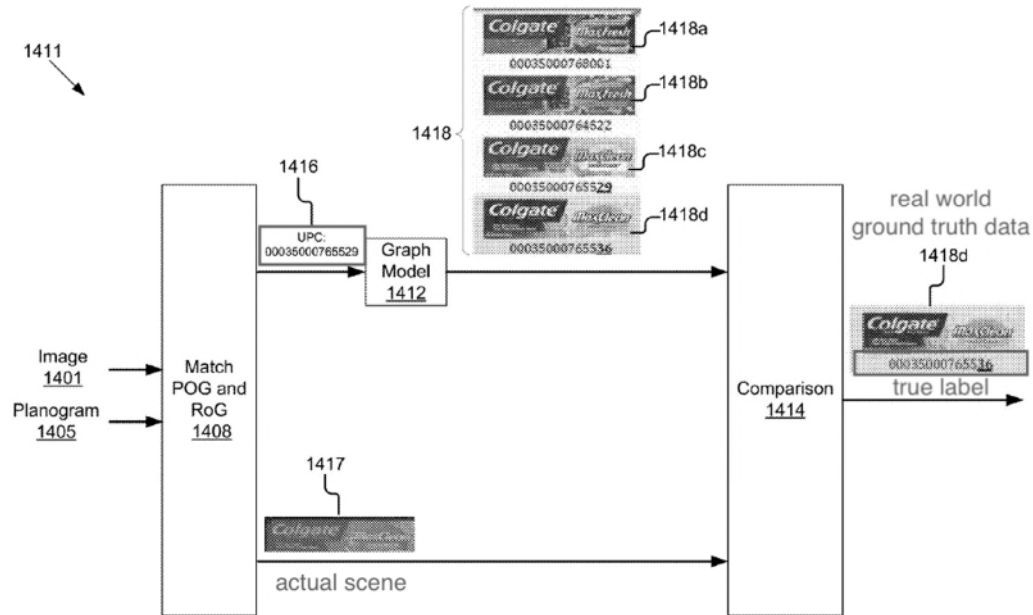


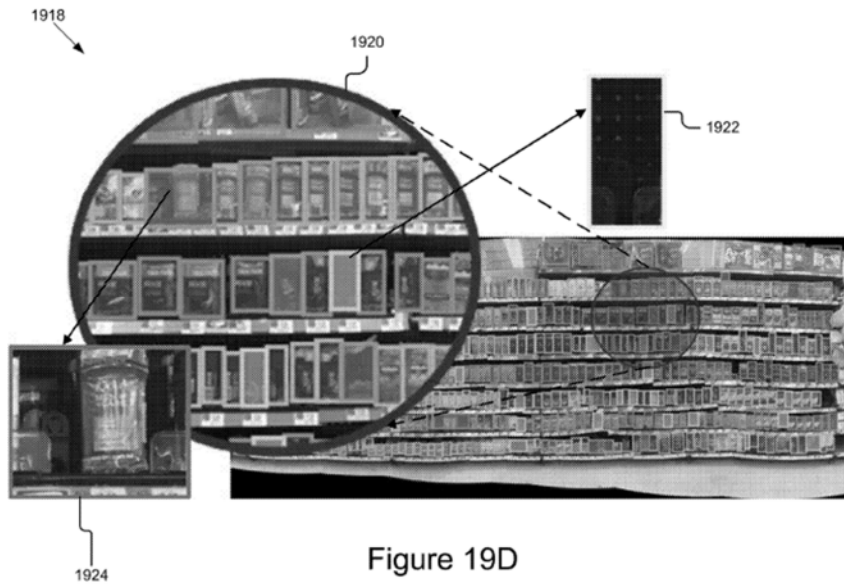
Figure 14B

Ex. 1005, FIG. 14B

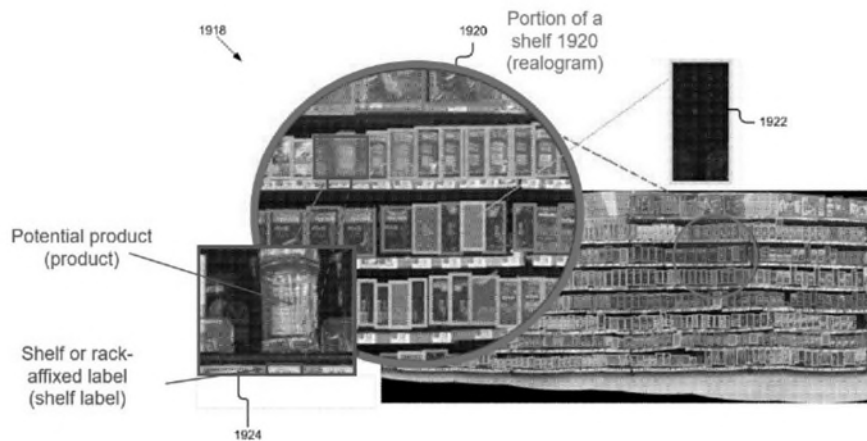
This understanding is readily corroborated by Schwartz's specifications. As shown in FIG. 14B, Schwartz discloses in detail how to generate real world ground truths through data labeling. "At match POG and ROG block 1408, the image processing module may receive the image 1401 and the planogram 1405 and perform a comparison to find the expected product 1416 *at each location*...the expected product may include a symbolic identifier, such as a *UPC*." *Id.* at [0131] (emphasis added). "The similar product graph model 1412 may identify similar products based on the symbolic identifier." *Id.* at [0132]. "The comparison block 1414 may identify the similar product 1418 that is the same as the image region 1417. In some

embodiments, the comparison block 1414 may be a manual comparison by a user for ground truth generation. The user may receive the similar products 1418*a*-1418*d* and identify which one of the similar products 1418*d* is the same as the image region 1417, even though the symbolic identifiers are different. The comparison block 1414 may then provide the correct similar product 1418*d* that was selected as a match to the expected product 1416.” *Id.* at [0133]. Thus, the “corresponding label” of Schwartz describes the “labeling” of data to generate real world ground truth for machine learning purposes, and not the “shelf label content” of the ’272 Patent.

Petitioner seeks to create a shelf label out from Schwartz’s teachings by annotating FIG. 19D of Schwartz and calling out the portion that Petitioner designates “Shelf or rack-affixed label (shelf label).” Paper 2, at 31. However, this designation is nothing but Petitioner’s unwarranted manipulation of Schwartz’s drawing, as is clear from the juxtaposition of the original and the “annotated” versions.



Ex. 1005, FIG. 19D (original)



“annotations” by Petitioner, Paper 2, at 31.

There is *nothing* in Schwartz that indicates any use or special designation for the called-out portion (which is close to illegible in the original drawing). The number 1924 refers to the product, not other image segments nearby. See Ex. 1005, at [0151]. Petitioner argues that a POSITA would understand this so-called “shelf

label” to include a product identifier such as a UPC 1416. Paper 2, at 31. However, Schwartz is clear in that 1416 is a product, not a UPC, and any UPC is included in the product, not placed on the shelf. *See* Ex. 1005, at [0131] (“In some embodiments, the expected product 1416 may include a symbolic identifier, such as a UPC. For example, in the data flow 1411 of FIG. 14B, the expected product 1416 includes the UPC: 00035000765529.”). Petitioner is basically arguing that, as there is *something* in FIG. 19D that *could* be a shelf label, Schwartz *must* be teaching the use of this thing in the way Petitioner hoped. Such wishful thinking cannot override Schwartz’s teachings to the contrary.

In fact, as admitted by Petitioner in its analysis of claim language “detecting and reading content of a shelf label on the portion of the shelf within the one or more images” (Paper 2, at 22-27), there is no direct disclosure in Schwartz of reading any shelf label content. Thus, Petitioner could not identify any disclosure in Schwartz for “detecting and reading content of a shelf label on the portion of the shelf within the one or more images,” for “cross-correlating the one or more product facing bounding boxes and one or more other product facing bounding boxes across one or more stores by matching the shelf label content with other shelf label content associated with the one or more product facing bounding boxes,” or for “building training data based on the association of the shelf label content with the cross-correlated product facing bounding boxes.”

Further, because Schwartz is directed towards “a system and method for performing planogram (POG) matching between an image and a planogram (POG)” (Ex. 1005, at [0003]), the only potentially relevant information Schwartz would extract from images would be necessarily local, that is, whether the product image at a particular shelf space matches the planogram information for that particular shelf space. Instead of cross-correlating product facing bounding boxes with shelf label content from elsewhere, Schwartz discloses aligning the plurality of objects from the one or more images to a planogram. Ex. 1005, at [0116], FIG.3; *see also id.* at [0006], [0056], [0112], [0114], [130-131].

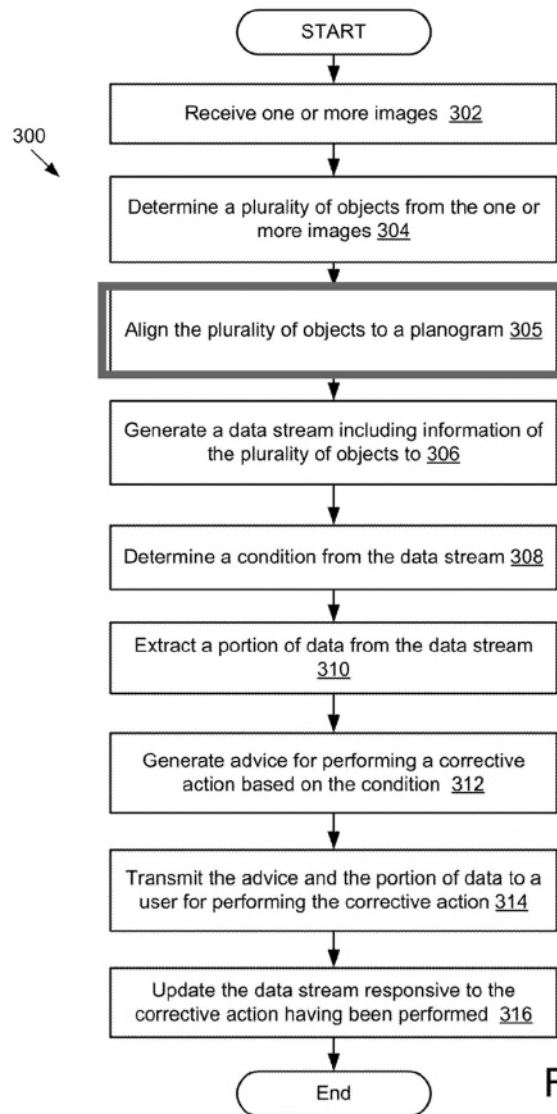


Figure 3

Ex. 1005, FIG.3 (annotated)

Thus, there would be no need for Schwartz to cross-correlate product facing bounding boxes with other shelf label content from elsewhere because the plurality of objects from the one or more images are instead correlated with the planogram. That is, Schwartz teaches away from any need for cross-correlating.

Petitioner argues that Schwartz's disclosure of aggregating and summarizing product information across stores (*Id.* at [0081]-[0083]) is a disclosure of the cross-correlating step. Paper 2, at 36. However, Petitioner never identified any step in this disclosure that can be matched to the claimed cross-correlating between products and affiliated shelf label contents. In fact, the data stream generator in Schwartz only functions to generate a data stream based on object information pre-determined by the image process module. Ex. 1005, at [0079]. It is the image processing module that, in a previous step, "extracts features from the one or more received images and *matches the extracted features to those features stored in the database for recognition*", then "determines one or more images associated with an identified object." *Id.* at [0072], [0074] (emphasis added). Because the information to be aggregated or summarized represents information already matched with features stored in the database and associated with an identified object from a previous image processing step (*Id.* at [0074]-[0080]), and represents more abstract event-based data streams (*Id.* at [0081]), there would be no need for any further cross-correlating, training or classification based on image data itself. Thus, the aggregation and summarization cannot teach the claimed cross-correlation.

Petitioner tries to use Katircoglu to cure the defect of Schwartz, but the only disclosure it identified was "Katircioglu teaches capturing product inventory data across time in an 'ongoing process' of 'image and inventory data correlation

building.” Paper 2, at 38. At most, this speaks to correlating image and inventory data, not image and other shelf label content across stores. Further, the image and inventory data correlation Katircioglu is to “build an image-count correlation database contain[ing] a large number of correlation pairs of each product type, which are collected *at different time instances*.” Ex. 1007, at [0027]. Therefore, Katircioglu discloses collecting image and inventory data at different time instances, instead of cross-correlating product facing bounding boxes with other shelf label contents across stores. Petitioner has not identified any disclosure in Katircioglu of the claimed cross-correlation.

In fact, the identifier tags of Katircioglu are “matched with the barcode data in the *inventory database*” to retrieve the associated product image, the retrieved product image is then matched with the segmented product image. Ex. 1007, at [0038] (emphasis added). As shown in FIG. 7, “[t]he identifier tags include barcodes and are associated with a segmented inventory image and pre-captured product image...the inventory database 410 includes barcode data associated with each product type. The extracted barcode is matched with the barcode data in the inventory database 410 and the associated product image is retrieved. In this example, the retrieved product image matches with the segmented product image. Thus, the product identification is confirmed.” *Id.*

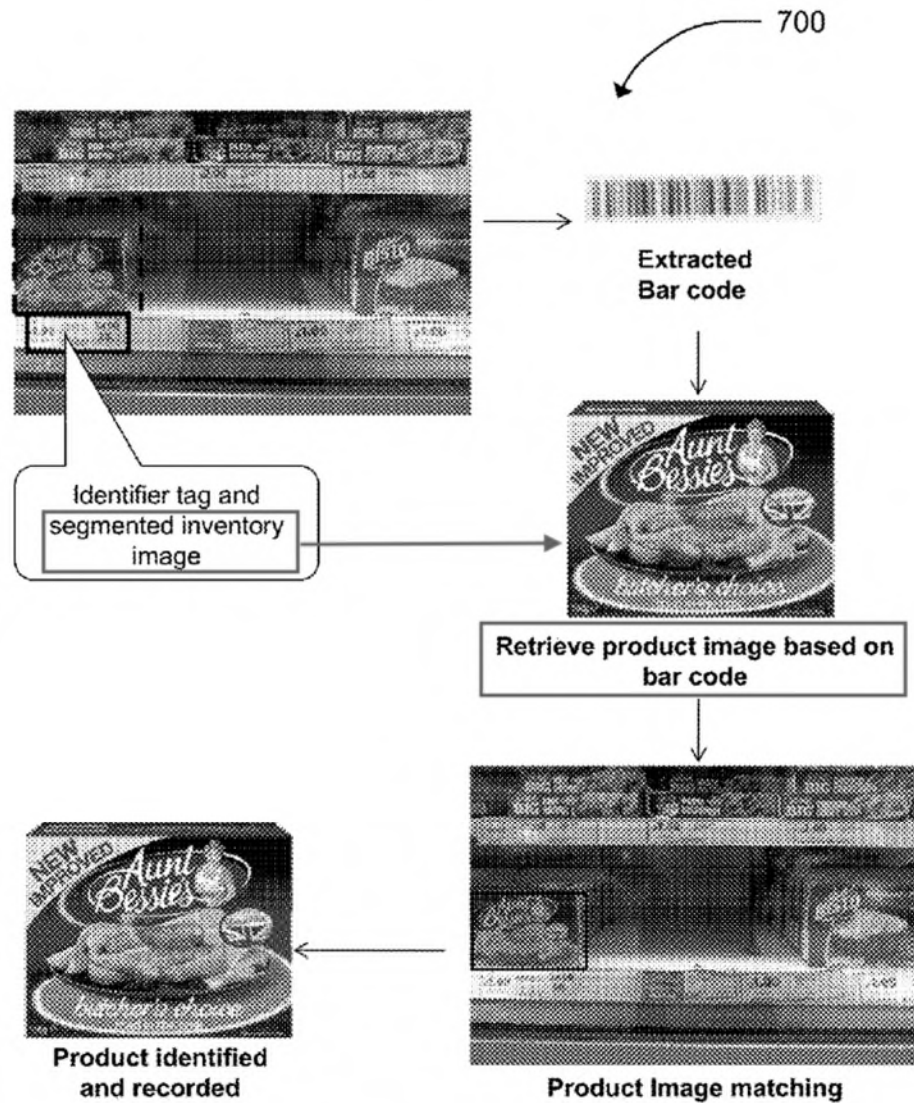


Fig. 7

Ex. 1007, FIG. 7

Since Katircoglu provides an existing inventory database to match the identifier tags, there is no need for Katircoglu to cross-correlate product facing bounding boxes with other shelf label content.

Even if Katircoglu discloses some kind of cross-correlation (it does not), there would be no motivation to combine. As explained above, Schwartz discloses correlating the plurality of objects from the one or more images with one existing planogram instead of any cross-correlation, or even reading any shelf label content. Petitioner fails to show why a POSITA would have combined the teachings of Schwartz and Katircoglu to cross-correlate shelf label contents with each other when the planogram of Schwartz already was configured for matching with images. *See, e.g., General Electric Company*, Appeal No. 2021-000804, at 5-6 (P.T.A.B. Mar. 14, 2022) (finding no motivation to combine when the problem was already solved by the primary reference). Petitioner's reasoning appears to be the result of hindsight analysis.

**B. Ground 3 Does not Render Claim 1 Obvious**

Ground 3 does not render Claim 1 obvious because Petitioner fails to show that Avegliano<sup>157</sup>, in combination with Rodriguez, discloses or renders obvious the claimed “cross-correlating the one or more product facing bounding boxes and one or more other product facing bounding boxes across one or more stores by matching the shelf label content with other shelf label content associated with the one or more other product facing bounding boxes” or “building training data based on the association of the shelf label content with the cross-correlated product facing bounding boxes” (e.g., limitations [1.5], [1.6]).

Petitioner argues that Avegliano157's disclosure of "determining sales velocity and sales trend over 'a period of time' entails cross-correlating product and affiliated shelf tag information across images taken at different points of time." Paper 2, at 81. However, Avegliano157 never discloses cross-correlating product and affiliated shelf tag information across images.

Instead, Avegliano157 discloses a first image processing application "us[ing] the tag template and distribution information read from the *tag database* in identifying the tags" and a second image processing application "us[ing] the *identified tags and their coordinates*, along with the picture, the map the tags to a shelf and its corresponding assortment of items. Ex. 1009, at [0062] (emphasis added). The second image processing application reads product templates related to the identified tags from the *product database* to identify the products in the picture." *Id.* (emphasis added). Specifically, "[w]hen a user takes a picture of an arbitrary shelf, the first image-processing application identifies the current shelf from the tags, and then retrieves its list of products associated with the current shelf from the product database, along with *each product's associated width and height*, as illustrated in FIG. 6. After loading the *templates for the current shelf*, the second image-processing application attempts to match the template to every item from the list in the image using the height and width information, as shown in FIG. 7" *Id.*, at [0063] (emphasis added).

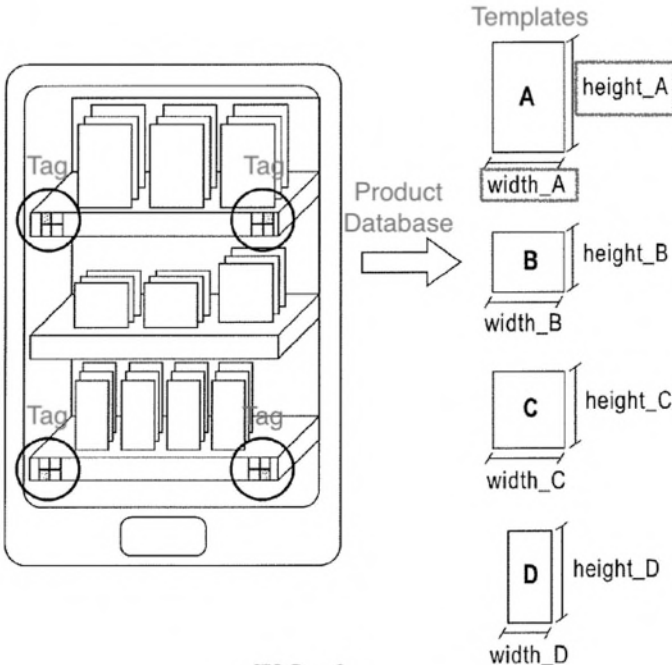


FIG. 6

Ex. 1009, FIG. 6

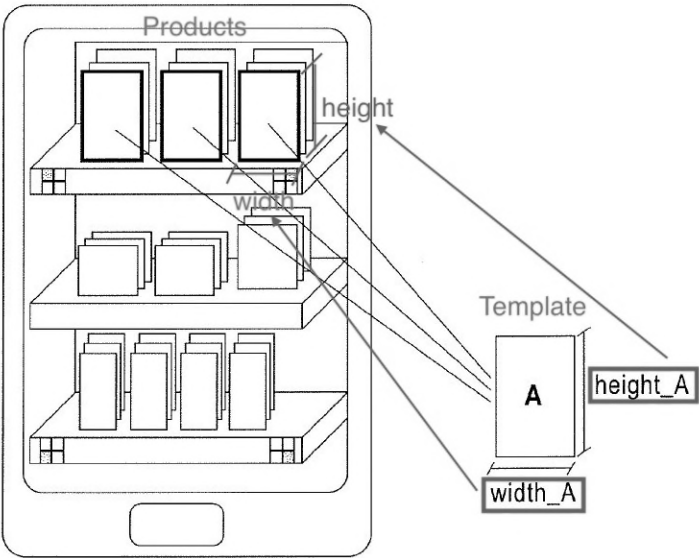


FIG. 7

Ex. 1009, FIG. 7

First, a POSITA would understand that, Avegliano157's method does not use any association between shelf label content and a product facing bounding box, instead, tag coordinates are used to retrieve product height and width information (which is not present on the tag and therefore not "shelf label content"), and the height/width information is used to identify the product. Therefore, there would be no need to build any training data based on the association of shelf label content with the product facing bounding boxes (whether cross-correlated or not).

Further, there cannot be any need for cross-correlating with other shelf label content across images for Avegliano157 because tags on the shelves are identified using the tag template and distribution information from an existing tag database, after the current shelf is identified using the tag coordinates, the list of products associated with the current shelf is read separately from the product templates for the current shelf stored in a product database. Ex. 1009, at [0062-0063]. Therefore, a POSITA would not be motivated to match tags of Avegliano157 with other tags from elsewhere when the information already exists in the tag database of Avegliano157. Similarly, a POSITA would not be motivated to cross-correlate one product facing bounding box with another when product templates are stored in an established product database of Avegliano157.

In fact, Avegliano157's reliance on existing tag database and product database makes it exactly the kind of prior arts relying upon planograms (lists or diagrams

that show how and where specific products should be placed on shelves or displays) that the '272 patent is improving upon. Ex. 1001, at 1:37-53.

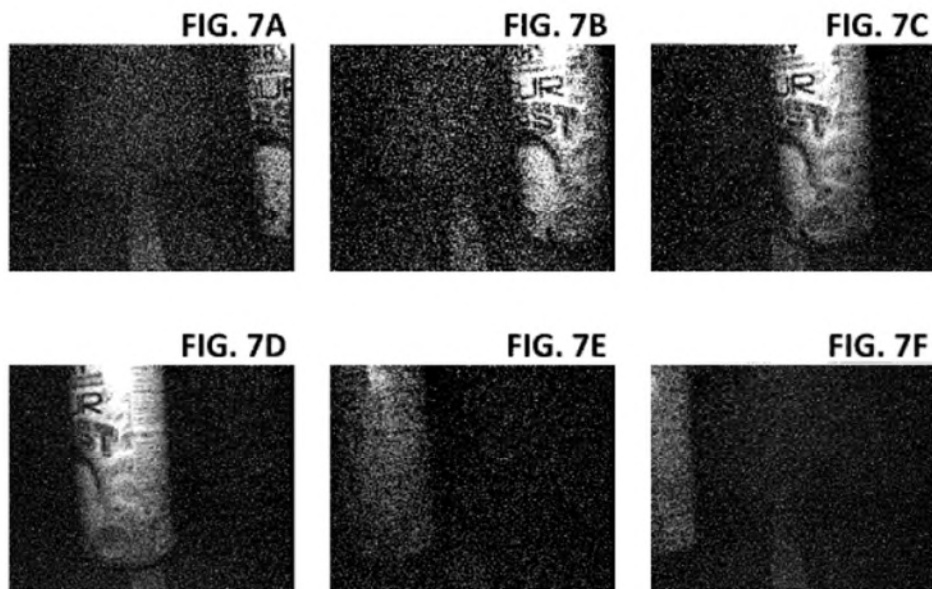
Even if Avegliano157 discloses some kind of correlation, such correlation cannot be cross-correlation with other shelf label content. Avegliano157 discloses collecting data regarding the number of products in the shelf and turnover of products "in a period of time." Ex. 1009, at [0046]. That is, Avegliano157's disclosure, by focusing on images taken over a period of time, always correlates product facing bounding boxes at a fixed shelf location with the same shelf label content associated with that fixed shelf location, not "across one or more stores" with "other shelf label content."

Petitioner argues that "Avegliano157 also teaches special aggregation of retail product and affiliated shelf label information" without support. Paper 2, at 81. Petitioner further argues that "Avegliano157's 'vendor-managed inventory (VMI) business model' achieves improved efficiency in a multi-retailer scenario would entail cross-correlating product and affiliated shelf tag information across multiple, retailers, store types, and time because this enables a more accurate determination and evaluation across multiple stores in a geographical region." *Id.* However, there are only two instances where Avegliano157 mentions the so-called vendor inventory management model, neither of them provides any elaboration on its meaning except that "the vendor supplier is responsible for maintaining an agreed level of products

in stock” in this model. Ex. 1009, at [0011], [0056]. Petitioner’s conclusory allegation provides no reasonable basis for understanding how this would entail “cross-correlating product and affiliated shelf tag information across multiple, retailers, store types, and time.”

Petitioner’s expert presents the same conclusory allegation and further argues that Avegliano157’s method’s “[o]ptimization and visualization have the potential to further improve the quality of a platform,” “Avegliano157’s method of determining sales velocity and trends also benefits ‘scenarios with several retailers and several producers [that] may have distribution plans properly modeled as Multi-commodity Flow problems,’” and “techniques dedicated to the Vehicle Routing Problem can employ knowledge about sales velocity to generate replenishment for merchants.” Ex. 1003, at ¶247. However, none of these could be disclosure of the alleged “special aggregation.” The mere fact that Avegliano157 mentions “platform,” “several retailers” and “several producers” does not remotely disclose cross-correlating with other shelf label contents across multiple retailers and stores. A POSITA would understand these disclosures to mean separately applying the same method for determining sales velocity of a fixed shelf location to several retailers over a platform, so as to employ knowledge about sales velocity in solving vehicle routing problem.

Petitioner further argues that Rodriguez discloses the claimed cross-correlation (Paper 2, at 81-84), but there is not a single disclosure of shelf label content (or, for that matter, “shelf”) in Rodriguez. In fact, even the figures reproduced by Petitioner fail to disclose any shelf label.



*Rodriguez*, Figs. 7A-F.

Paper 2, at 82

The best that Petitioner could point to is a summary disclosure of “still and/or video imagery from aisles of a supermarket” ([0186]), but that cannot be understood as disclosing any use of shelf label content. The mention of “barcode” in the same paragraph is also not related to shelf label content as Rodriguez is filled with disclosures of the use of barcodes in a context clearly detached from any shelf environment, such as at point-of-sale. *See, e.g.*, Ex. 1010, at [0082-0083] (cited in

Paper 2, at 82-83). Therefore, Rodriguez fails to disclose any association between bounding boxes and shelf label contents, much less the required cross-correlations (notably, Petitioner never identified any disclosure of determining product bounding boxes in Rodriguez either). Petitioner apparently thinks that the mere multi-image-taking process in Rodriguez somehow teaches the cross-correlation step, but without any bounding box and any shelf label content, there is nothing to correlate, much less cross-correlate as required by the claims.

Additionally, as discussed above, the tag database and product database of Avegliano157 were already configured for identifying tags and products associated with the current shelf, so there is no motivation to combine Rodriguez's teachings with those of Avegliano157, even if Rodriguez discloses some kind of cross-correlation (it does not). *See, e.g., Ex parte Allen*, Appeal No. 2018-008208, at 3–6 (P.T.A.B. July 1, 2020).

### **C. Grounds 2 and 4 Do not Render Claim 1 Obvious**

Finally, Petitioner never argued that Grounds 2 and 4 render claim 1 obvious. Paper 2, at 51, 94. Thus, for reasons discussed at the beginning of this Section V, Petitioner cannot demonstrate a reasonable likelihood that Grounds 2 and 4 render any claim obvious.

**VI. THE BOARD SHOULD EXERCISE ITS DISCRETION AND DENY INSTITUTION**

Further, the Board should exercise its discretion and deny institution under an analysis of the *Fintiv* factors.

The first *Fintiv* factor is at most neutral because the District Court has not considered a motion to stay. The second factor favors denial of institution because the jury selection in the District Court case is currently scheduled for February 17, 2026 (*see* Exhibit 2001), barely two months after the expected final written decision date. The third factor favors denial of institution because both parties have invested substantially in the discovery process, producing documents and conducting source code reviews. The fourth factor favors denial because there is a high overlap of claims (Petitioner challenges claims 1-21 in the current proceeding, which includes the only three independent claims 1, 10, and 18, while the Patent Owner has raised claims 1, 3-13, and 15-19 in the District Court Proceeding) and Petitioner did not offer a *Sotera* stipulation. The fifth factor favors denial because the parties are the same. The sixth factor also favors denial because, as shown above, Petitioner's arguments are meritless.

Therefore, five out of the six *Fintiv* factors favor denial, with the remaining one at most neutral. The Board should exercise its discretion and deny institution.

## **VII. THERE IS NO GOOD CAUSE FOR A PRE-INSTITUTION REPLY**

In view of the deficiencies in the Petition discussed above, Petitioner might seek to file a pre-institution reply. But there would be no good cause for a pre-institution reply. Petitioner fully discussed the grounds already, but did not demonstrate a reasonable likelihood that any challenged claim is unpatentable. Therefore, Petitioner has no good cause to seek a second chance of discussing them (and bypassing the character count limits imposed upon the Petition) through a pre-institution reply. *See, e.g., Ontel Prods. Corp. v. Guy A. Shaked Invs. Ltd.*, IPR2020-01703, Paper 10 at 2 (Feb. 4, 2021) (denying reply for “subjects that Petitioner should have developed in its Petition”).

## **VIII. CONCLUSION**

For at least the above reasons, Patent Owner respectfully requests the Board deny institution.

Date: October 16, 2024

Respectfully submitted,

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IPR2024-01045

Patent Owner's Preliminary Response

**CERTIFICATE OF WORD COUNT**

I hereby certify that the foregoing PATENT OWNER'S PRELIMINARY RESPONSE includes 6,467 words (as calculated by Microsoft Word), excluding those in the table of contents, table of authorities, list of exhibits, list of claims, mandatory notices, signatures, certificate of word count, and certificate of service. Accordingly, this Preliminary Response is under the word count limit of 14,000 words.

Date: October 16, 2024

Respectfully submitted,

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**CERTIFICATE OF SERVICE**

Pursuant to 37 C.F.R. § 42.6(e), I hereby certify that, on October 16, 2024, a set of true and correct copies of PATENT OWNER'S PRELIMINARY RESPONSE and supporting materials has been served via e-mail and UPS to the Petitioner by serving the below-listed attorneys of record for Petitioner in the concurrent proceeding:

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