

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

GOOGLE LLC
Petitioner

v.

VALTRUS INNOVATIONS LIMITED,
Patent Owner

IPR2026-00262

Patent No. 7,057,509

**PETITION FOR *INTER PARTES* REVIEW
OF U.S. PATENT NO. 7,057,509**

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LIST OF EXHIBITS

Ex. 1001	U.S. Patent No. 7,057,09 (“the ’509 patent”)
Ex. 1002	Declaration of David Williams
Ex. 1003	Curriculum Vitae of David Williams
Ex. 1004	Prosecution History of U.S. Patent App. No. 10/881,975
Ex. 1005	U.S. Patent No. 7,439,847 (“Pederson”)
Ex. 1006	U.S. Patent No. 7,212,113 (“Zanovitch”)
Ex. 1007	U.S. Patent No. 7,227,569 (“Maruya”)
Ex. 1008	U.S. Patent No. 6,456,234 (“Johnson”)

I. INTRODUCTION

Google LLC (“Petitioner”) respectfully requests *inter partes* review of claims 14-21, and 25-28 (“the challenged claims”) of U.S. Patent No. 7,057,509 (“the ’509 patent”) (Ex. 1001) assigned to Valtrus Innovations Limited (“Patent Owner” or “PO”).

The ’509 patent issued from an application filed more than two decades ago; originally assigned to Hewlett Packard. It was assigned to PO in 2021 and then expired over a year ago in October 2024. PO is an Irish company that has no apparent business other than owning and asserting a portfolio of Hewlett Packard patents.¹ But the ’509 patent is not now and has never been asserted against Google.

The ’509 patent claims nothing more than known object identification and tracking methods. It had limited prosecution, with only a single rejection over a single reference. (*See infra*, §VII.B.) After that, the examiner allowed all claims when the applicant moved a limitation requiring “comparing new content of said monitoring data of a monitored object with prior content of said monitoring object” from the dependent claims to each of the independent claims. (*See id.*) But as this Petition demonstrates, that was well known in the art too.

¹ <https://www.valtrusinnovations.ie/> (About Us)

Accordingly, Petitioner requests that the Board institute review and cancel the challenged claims.

II. MANDATORY NOTICES

Real Parties-in-Interest: Pursuant to 37 C.F.R. §42.8(b)(1), Petitioner identifies Google LLC² as the real party-in-interest.

Related Matters: Petitioner is not aware of any related matters.

Counsel and Service Information: Designated lead counsel for Petitioner is Naveen Modi (Reg. No. 46,224, naveenmodi@paulhastings.com). Backup counsel are Chetan Bansal (Reg. No. 81,590, chetanbansal@paulhastings.com) and David Valente (Reg. No. 76,287, davidvalente@paulhastings.com). Service information is Paul Hastings LLP, 2050 M Street NW, Washington, D.C. 20036, Tel.: 202.551.1700, Fax: 202.551.1705, email: PH-Google-Valtrus-IPR@paulhastings.com. Petitioner consents to electronic service.

III. PAYMENT OF FEES UNDER 37 C.F.R. §§42.15 AND 42.103

The PTO is authorized to charge any fees due during this proceeding to Deposit Account No. 50-2613.

² Google LLC is a subsidiary of XXVI Holdings Inc., which is a subsidiary of Alphabet Inc. XXVI Holdings Inc. and Alphabet Inc. are not real parties-in-interest to this proceeding.

IV. GROUNDS FOR STANDING

Petitioner certifies under 37 C.F.R. §42.104(a) that the '509 patent is available for review and Petitioner is not barred or estopped from requesting review on the grounds identified herein.

V. PRECISE RELIEF REQUESTED AND GROUNDS RAISED

Petitioner respectfully requests review of claims 14-21, and 24-28 of the '509 patent and cancellation of these claims as unpatentable. The challenged claims should be found unpatentable on the following grounds:

Ground 1: Claims 14-19, and 24-26 are unpatentable under pre-AIA 35 U.S.C. §102 as anticipated by Zanolitch (Ex. 1006).

Ground 2: Claims 14-19, and 24-26 are unpatentable under pre-AIA 35 U.S.C. §103 as obvious in view of Zanolitch and Johnson (Ex. 1008).

Ground 3: Claims 14-19, and 24-26 are unpatentable under pre-AIA 35 U.S.C. §102 as anticipated by Pederson (Ex. 1005).

Ground 4: Claims 14-19, and 24-26 are unpatentable under pre-AIA 35 U.S.C. §103 as obvious in view of Pederson and Johnson.

Ground 5: Claims 20, 21, 27 and 28 are unpatentable under pre-AIA 35 U.S.C. §103 as obvious in view of Pederson and Maruya (Ex. 1007).

Ground 6: Claims 20, 21, 27 and 28 are unpatentable under pre-AIA 35 U.S.C. §103 as obvious in view of Pederson, Maruya, and Johnson.

For purposes of this proceeding, Petitioner assumes the earliest possible priority date of the '509 patent is its filing date, June 29, 2004. Pederson issued from an application filed August 22, 2003 (Ex. 1005, Cover), Zanolich issued from an application filed May 4, 2004 (Ex. 1006, Cover), Maruya issued from an application filed May 6, 2003 (Ex. 1007, Cover), and thus each qualifies as prior art under at least pre-AIA §102(e). Johnson issued on September 24, 2002, from an application filed on June 7, 2000, and thus qualifies as prior art under at least pre-AIA §102(b).

The above-listed prior art was not identified during prosecution (Ex. 1001, Cover; *see also generally* Ex. 1004.)

VI. LEVEL OF ORDINARY SKILL

A person of ordinary skill in the art at the time of the alleged invention of the '509 patent ("POSITA") would have had an undergraduate degree in computer science, computer engineering, electrical engineering, or a related field along with two years of work experience in the field of information technology systems, including *e.g.*, monitoring systems, identification systems, and tracking systems.

(Ex. 1002 ¶¶34-35.)³ More education can supplement practical experience and vice versa. (*Id.*)

VII. OVERVIEW OF THE '509 PATENT AND THE PRIOR ART⁴

A. '509 Patent

The '509 patent broadly relates to “methods and system for monitoring an object” using “identification data and tracking data.” (Ex. 1001, 1:8-11.) The '509 patent admits that monitoring systems that identify objects were known and so were monitoring systems that track objects. (*Id.*, 1:13-46.) But the '509 patent contends that such tracking systems “tend to assign tracking identifiers to each monitored object” that “usually are unrelated to the real identity of the monitored object.” (*Id.*, 1:13-46.)

The '509 patent purportedly discloses “a monitoring system [that] merges a tracking system and an identification system to obtain the desired level of accuracy and flexibility.” (*Id.*, 2:46-48.) As shown in Figure 2, a monitoring unit 10 can

³ Petitioners submit the declaration of David Hilliard Williams (Ex. 1002), an expert in the field of the '509 patent. (Ex. 1002 ¶¶1-147 (citing Ex. 1001, Ex. 1004-Ex. 1008); Ex. 1003.)

⁴ Mr. Williams also provides overviews of the prior art, including secondary references Maruya and Johnson. (Ex. 1002 ¶¶24-59.)

receive tracking and identification data for an object from a tracking system and an identification system, respectively, and “merge” the identification information with the tracked information to create monitoring data for the monitored object. (*See id.*, 5:6-28, Fig. 2.) Identification information may include an “identity” of the monitored object and tracking information may include “description of the tracked object.” (*Id.*, 6:16-24.)

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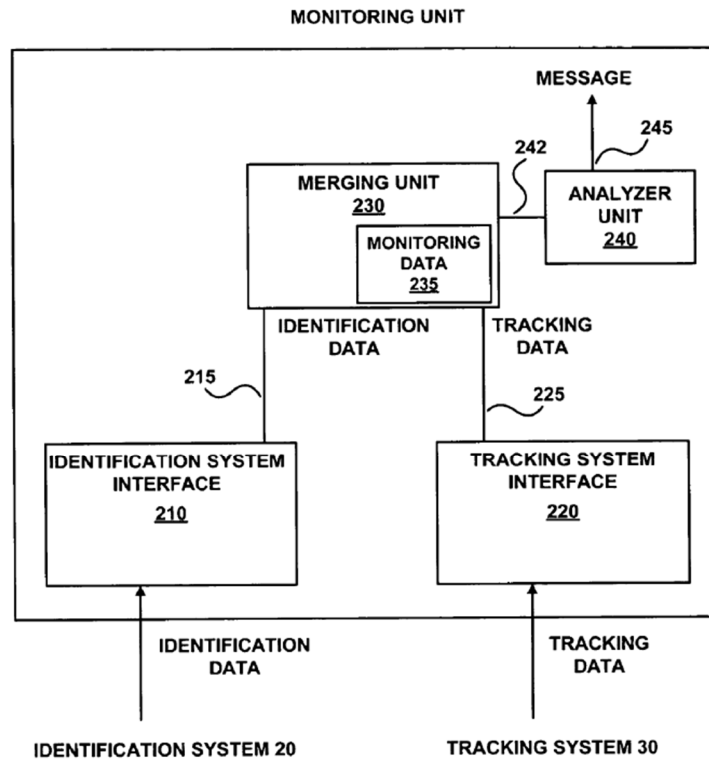


FIG. 2

(*Id.*, Fig. 2.) Identification system 20 can be human-assisted such as “a police officer that checks the passport number from the people passing through a security point,” or automated such as an RFID tag reader. (*Id.*, 4:11-26.) Tracking system 30 can be, for example, non-invasive sensors (e.g., cameras) or invasive sensors such as radio frequency sensors. (*Id.*, 2:50-61, 3:55-63.) The tracking and identification systems monitor an object in a “monitored environment.” (*Id.*, 3:1-3.)

The '509 patent primarily describes applications related to security. (*See, e.g., id.*, 4:16-18, 4:39-45, 5:62-64, 9:22-10:46.) The system can be used, for example, in an airport to identify and track a passenger, including to compare the monitoring data for that passenger to determine a change in their baggage. (*See id.*, 9:22-10:46, Fig. 8.) For example, Figure 8 shows an application where a monitored object is passenger 37, John Smith. (*Id.*) At time 1 ($t=T1$), John Smith is at gateway 1 and the identification system determines that he has two bags (#suitcases: 2). (*Id.*) Then at time 2 ($t=T2$), John Smith is at gateway 2 and the identification system determines that he has only 1 bag (#suitcases: 1). (*Id.*) By comparing the current monitoring data from $t=T2$ with the prior monitoring data from $t=T1$, the system determines that #suitcases changed (i.e., John Smith, now with one bag instead of two) and creates a warning message 870 reflecting that changed monitoring data. (*Id.*)

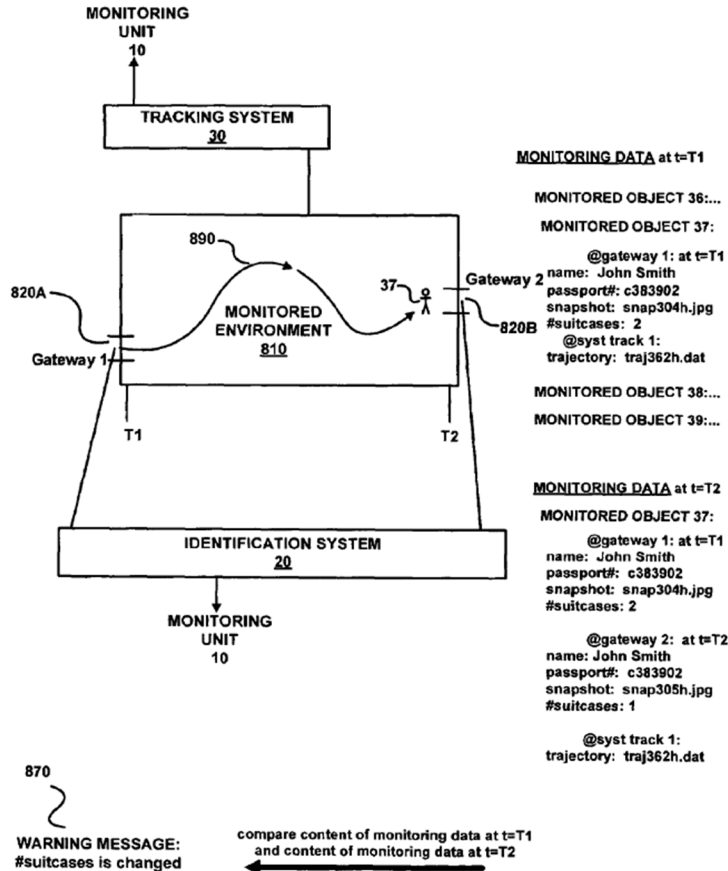


FIG. 8

(Ex. 1001, Fig. 8.)

B. Prosecution History

Application No. 10/881,975, which issued as the '509 patent, was filed on June 29, 2004. (Ex. 1001, Cover.) It does not claim priority to any earlier-filed application. (*Id.*)

During prosecution, the Office issued only one office action. The Office rejected pending claims 1, 2, 9, 10, 17-21, 28 and 29 as anticipated by Kovach (US 2005/0088320), and objected to the remaining claims as allowable but depending

from a rejected claim. (Ex. 1004, 372-377.) The Office did not identify any specific claim elements in those allowable claims that were not taught by the prior art. (*See id.*) The accompanying Notice of References Cited listed only three references. (*Id.*, 378.) And the applicant, who had not previously submitted an IDS, submitted only a single IDS following that rejection, which listed just five additional references. (*Id.*, 291.)

In response to the rejection, on March 13, 2006, the applicant amended the independent claims to include limitations pertaining to comparing new content of monitoring data of a monitored object with prior content of said monitoring object as recited in some of the dependent claims deemed allowable in the Office Action. (*Id.*, 285.) The Office then allowed the claims without any accompanying explanation. (*Id.*, 265.). As discussed herein (*infra*, §IX), the Office erred in allowing the claims because the broadly worded “comparing” limitation was in the prior art.

C. Zanolitch

Zanolitch relates to a system using a plurality of threat scanning machines and walk through metal detectors to track information associated with passengers and items, such as passengers in an airport and their baggage. (Ex. 1006, Abstract, 19:49-61.) With respect to Figure 39 (reproduced below), the system includes “a tracking and analysis module 3910, which includes an item tracking module 3912,

a passenger tracking module 3914, an analysis module 3916, an alarm module 3918, and a report module 3922.” (Ex. 1006, 18:63-19:1.) In general, “[t]he tracking and analysis module 3910 is connected to one or more command and control centers within the network of command and control centers 3980 (illustrated in FIG. 1),” which are directly or indirectly “connected to one or more threat scanning machines [(TSM)] 106, walk through metal detectors (WTMD) 3950,” or any “information acquisition and/or data entry system that can be used to receive information that can be utilized to track one or more of items and passengers.” (*Id.*, 19:1-12.)

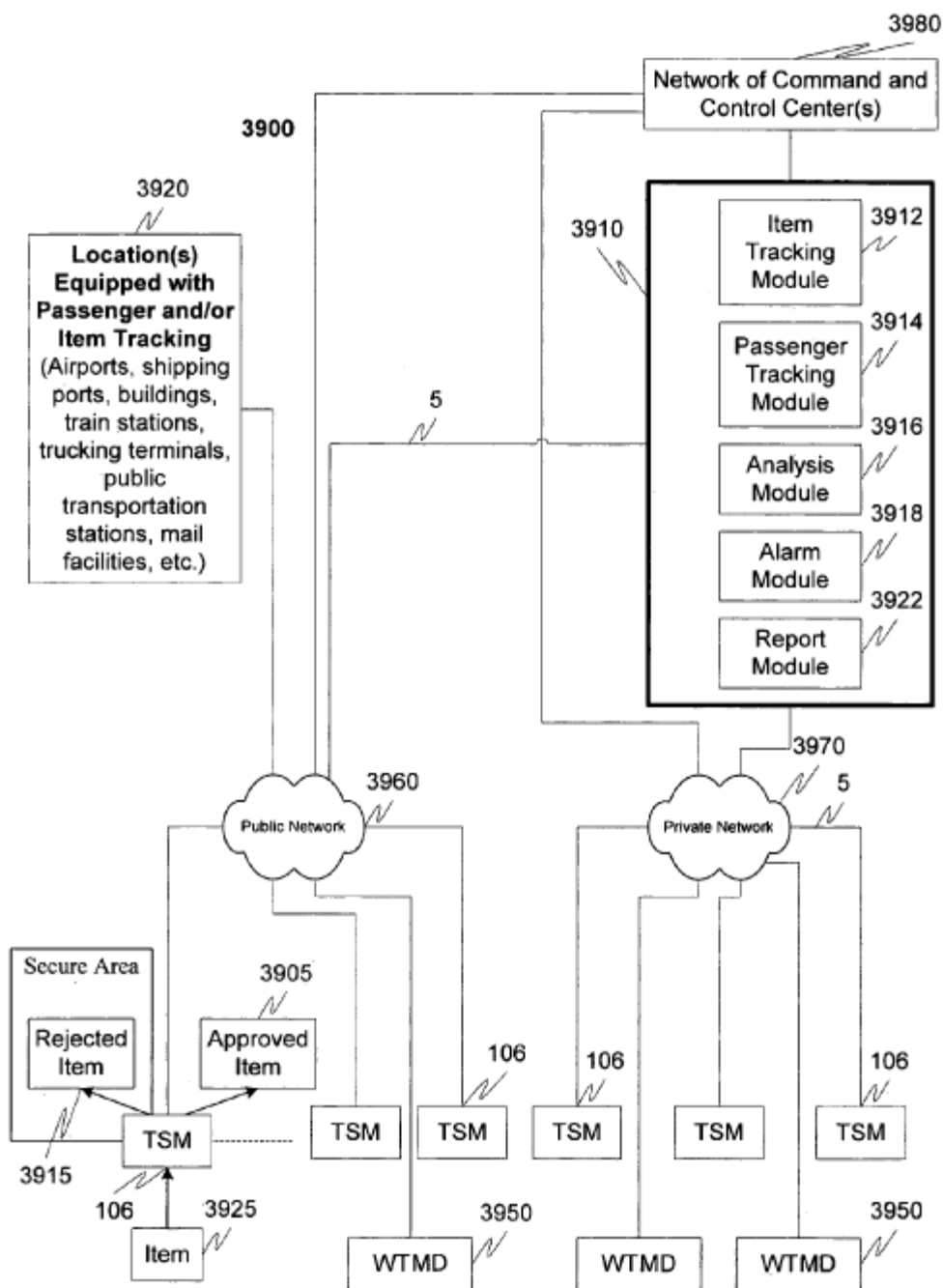


Fig. 39

(Id., Fig. 39.)

In an example use case of this system, a passenger is associated with their baggage, such as when they check in at the airport ticket counter. (*Id.*, 20:24-38.) The passenger and baggage are also identified, and “the item tracking module 3912 and passenger tracking module 3914 are updated with the item and passenger identification(s), respectively.” (*Id.*, 20:38-41; *see also id.*, 25:22-27.) That baggage information is linked to the passenger in the system’s data. (*Id.*, 20:41-44 (“For example, the item tracking module 3912 and passenger tracking module 3914 can store information indicating that ‘Passenger X’ has 2 checked bags and one carry on.”).)

As the passenger and his carry-on baggage move through the airport (or in and between multiple airports), they are tracked via a system of threat scanning machines 106 and walk through metal detectors 3950. For example, at the airport security checkpoint, a “walk through metal detector 3950 can be equipped with a passenger identification scanning device” that “forwards information to the passenger tracking module 3914.” (*Id.*, 20:57-67.) And a threat scanning 106 “obtains the item tracking identification associated with the scanned baggage and forwards the result of the threat scanning to the item tracking module 3912,” which includes baggage information such as “weight, contents, dimensions, or the like.” (*Id.*, 20:39-56.) That passenger and item information is stored and indexed. (*Id.*, 21:1-4.)

After check-in and security, passengers and their items are subsequently tracked within the airport system. (*See, e.g., id.*, 24:17-26.) The system can also compare current passenger and baggage information to prior information and trigger an alert if a threat is detected. (*See, e.g., id.*, 25:10-21, 25:27-36.) As one example, a change in the weight of a carry-on bag may be detected as a threat:

the passenger tracking module 3914 and item tracking module 3912 can cooperate with, for example, threat scanning machines 106 that are placed at the entrance of the airplane and can collect information related to one or more of items and passengers immediately prior to boarding. The analysis module could then perform an analysis between when the baggage went through a previous security checkpoint and the passenger/item bag as it is loaded onto the airplane. For example, a comparison can be made between the weight of a carry-on bag at the security check point and the weight of the carry-on bag at the airplane. If a difference exists, there may be sufficient cause to send an alert and or alter a risk level.

(*Id.*, 24:34-46.)

D. Pederson

Pederson relates to “[a]n intelligent video/audio observation and identification system” that “identif[ies] vehicles and individuals entering or exiting [a security] zone through image recognition of the vehicle or individual as

compared to prerecorded information stored in a database.” (Ex. 1005, Abstract.)

The system then “track[s] individuals or vehicles within a zone or between zones.”

(*Id.*) By comparing observed data to previously stored data, the system can also identify discrepancies and generate alerts. (*Id.*, 19:26-33.)

For example, Pederson discloses using input devices 12 (cameras) and 18 (“fingerprint scanners, palm scanners, microphones, retinal scanners, and the like”) at a checkpoint like that shown in Figure 2 to identify individuals and vehicles entering a security zone 50. (*Id.*, 7:59-8:2, 9:18-11:6, Fig. 2.) The system “receives data from all input devices 12, 18 for processing for identification” and that data is “stored within a continuously evolving database 30.” (*Id.*, 10:1-4; *see also id.*, 9:19-32.)

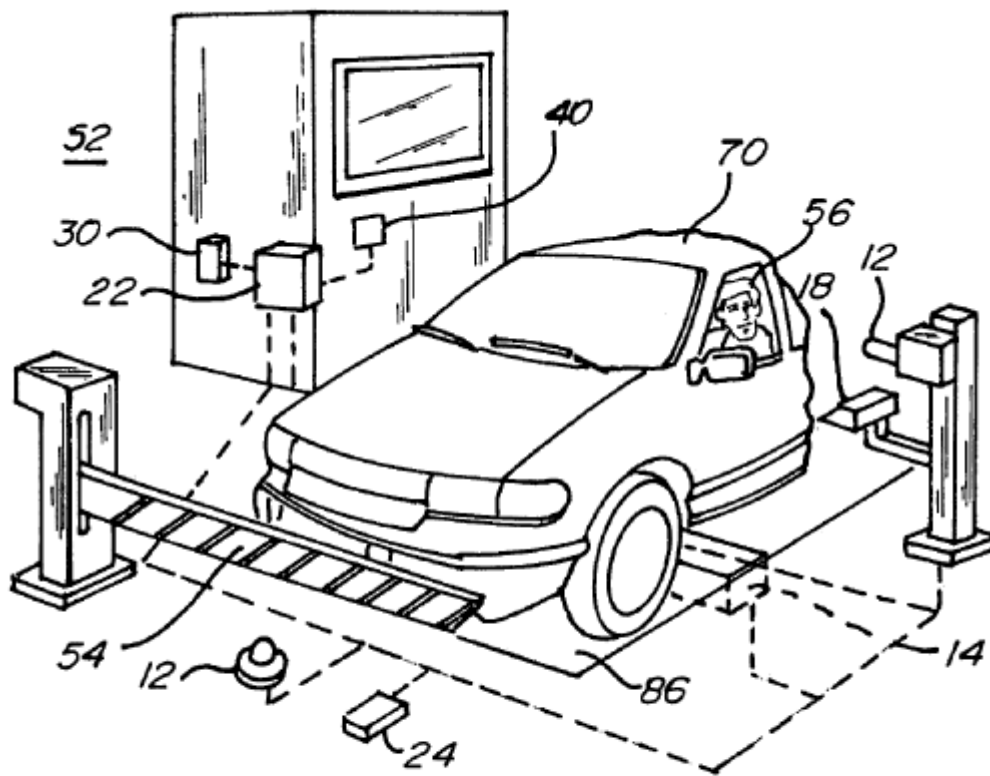


Fig. 2.

(*Id.*, Fig. 2.)

Within a security zone, Pederson's system tracks the identified individuals and vehicles "through the use of a plurality of optical sensors which may be cameras" that are each similarly "linked to a continuously evolving database to record information." (*Id.*, 7:47-55; *see also id.*, 19:34-39 ("A computer 22 may further track vehicles 70 or individuals 56 within the security zone 50 to identify the at rest position of the vehicle 70 or location of the individual 56 within the

security zone 50. In addition, the computer 22 will track the subsequent repositioning of a vehicle 70 or individual 56 within a security zone 50.”.)

Pederson stores the identification and tracking information “within the database 30 pertaining to the vehicle 70 or individual 56” using a classification system “such as by license plate 54, and other retrieved identification information.” (*Id.*, 16:35-38.) This recorded data is used “to build vehicle 70/individual 56 specific files or histories.” (*Id.*, 19:22-26.) Thus, new tracking and identification data is added to the file history for a given previously identified vehicle or individual. Pederson’s system can then “compare current vehicle 70 or individual 56 activity against previously stored and recorded activity data to establish standard deviations or thresholds which may, in turn, trigger a signal or warning if current conduct is outside acceptable parameters.” (*Id.*, 19:26-33; *see also id.*, 9:46-55 (“the computer 22 receives data independently from one or more input devices 12, 18 for analysis against pre-stored and/or prerecorded data in the database 30 related to the vehicle 70 and/or individual 56”), 16:50-55.) Such a comparison can be done by, for example, normalizing the historic data related to an individual 56 and/or vehicle 70 and comparing the current data for that individual/vehicle to the normalized data that represents their historic actions. (*Id.*, 19:18-26.)

VIII. CLAIM CONSTRUCTION

The Board only construes the claims when necessary to resolve the underlying controversy. *Toyota Motor Corp. v. Cellport Sys., Inc.*, IPR2015-00633, Paper No. 11 at 16 (P.T.A.B. Aug. 14, 2015) (citing *Vivid Techs., Inc. v. Am. Sci. & Eng'g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999)). Here, given the correlation between the prior art references and the challenged claims of the '509 patent, the Board need not construe any terms of the challenged claims to resolve the underlying controversy. (Ex. 1002 ¶¶60.)⁵ As demonstrated below, the prior art in the proposed grounds disclose or suggest and render obvious the challenged claims under any reasonable interpretation.

IX. DETAILED EXPLANATION OF GROUNDS

As detailed below, each of the challenged claims are unpatentable.
(Ex. 1002 ¶¶61-147.)

⁵ Petitioners reserve all rights to raise claim construction and other arguments, including challenges under 35 U.S.C. §112, in other proceedings, should they occur in the future. Petitioner does not concede the claims are definite, have specification support, etc.

A. Ground 1: Zanolitch Anticipates Claims 14-19, and 24-26

1. Claim 17

i. [17.pre] “A method of monitoring an object, said method comprising:”

To the extent limiting, Zanolitch discloses the preamble of claim 17.

(Ex. 1002 ¶¶62-64.) For example, Zanolitch discloses a method of identifying and tracking (“**monitoring**”) a bag (e.g., a passenger’s carry-on bag) (“**an object**”) as discussed for the below claim limitations.⁶ (Ex. 1002 ¶62; *supra*, Section VII.C.)

Zanolitch discloses that “[u]pon arrival at the security checkpoint a passenger generally places their carry-on baggage on a conveyor for scanning by a threat scanning machine 106[,]” which “obtains the item tracking identification associated with the scanned baggage and forwards the results of the threat scanning to the item tracking module 3912.” (Ex. 1006, 20:44-56.) Then,

the passenger tracking module 3914 and item tracking module 3912 can cooperate with, for example, threat scanning machines 106 that are placed at the entrance of the airplane and can collect information related to one or more of items and passengers immediately prior to boarding. The analysis module could then perform an analysis between when the baggage went through a previous security checkpoint and the passenger/item bag

⁶ Claim language is bolded from here on.

as it is loaded onto the airplane. For example, a comparison can be made between the weight of a carry-on bag at the security checkpoint and the weight of the carry-on bag at the airplane.

(*Id.*, 24:34-44.)

Accordingly, Zanolitch discloses “[a] **method of monitoring an object.**”

(Ex. 1002 ¶¶63-64.)

- ii. [17.a] **“generating identification data associated with each monitored object located at an identification gateway of a monitored environment, wherein said generating identification data is performed by an identification system;”**

Zanolitch discloses this limitation. (Ex. 1002 ¶65.) Zanolitch’s disclosed system is able to identify and track items (e.g., a passenger’s carry-on bag) (“**monitored object**”). For example, at the check-in counter (“**identification gateway**”) of an airport (“**monitored environment**”), “scanning equipment [] is capable of associating one or more item identifier ... with the item(s)” such as a passenger bag. (Ex. 1006, 20:24-37.) “Upon check-in, the item tracking module 3912” is “updated with the item ... identification(s).” (*Id.*, 20:39-41; *see also id.*, 19:62-66 (“Each item also needs to be identifiable.”).) Therefore, the “scanning equipment” is an “**an identification system**” that “**generat[es] identification data associated with each monitored object located at an identification gateway of a**

monitored environment, wherein said generating identification data is performed by an identification system.” (Ex. 1002 ¶65.)

- iii. [17.b] **“generating tracking data associated with each monitored object located within said monitored environment, wherein said generating tracking data is performed by a tracking system;”**

Zanovitch discloses this limitation. (Ex. 1002 ¶¶66-67.) “Upon arrival at the security checkpoint a passenger generally places their carry-on baggage on a conveyor for scanning by a threat scanning machine 106[,]” which “obtains the item tracking identification associated with the scanned baggage and forwards the results of the threat scanning to the item tracking module 3912.” (Ex. 1006, 20:44-56.) “These results can include ... any supplemental information regarding the baggage such as, for example, *weight*, contents, dimensions, or the like.” (*Id.* (emphasis added).)

The threat scanning machines 106 (TSM) are collectively **“a tracking system”** that generates **“tracking data”** (e.g., weight) associated with each **“monitored object”** (e.g., a passenger’s carry-on) **“located within said monitored environment”** (the airport). (Ex. 1002 ¶67.)

- iv. [17.c] **“merging and storing said identification data and said tracking data of each monitored object to form monitoring data for each monitored object; and”**

Zanovitch discloses this limitation. (Ex. 1002 ¶¶68-71.) Zanovitch discloses “a tracking and analysis module 3910” that includes, *inter alia*, item tracking module 3912, passenger tracking module 3914, and analysis module 3916. (Ex. 1006, 18:63-67, Fig. 39.) The item tracking module 3912 of the tracking and analysis module 3910 receives both the item identification and tracking data associated with that item (e.g., the weight of the item at the security checkpoint). (Ex. 1006, 20:39-55, 21:1-4, 21:36-43.) This “item information” is “stored and indexed” in the tracking and analysis module 3910 for later access by the analysis module 3916 therein (*infra*, §IX.A.1.v). (Ex. 1006, 21:1-4, 21:36-43, 21:63-22:3.) For example, the tracking and analysis module 3910 stores the “weight of a carry-on bag” at the security check-point, which is later compared to the weight of that same bag at the airplane by the analysis module 3916. (*Id.*, 24:34-44.)

Zanovitch thus discloses that the tracking and analysis module 3910 both stores and merges the identity (“**identification data**”) and the weight (i.e., “**tracking data**”) of each item such as a carry-on bag (“**each monitored object**”). (Ex. 1002 ¶69.)

Zanovitch’s disclosure is consistent with the ’509 patent. The ’509 patent discloses that “**merging**” identification and tracking data for an object

encompasses at least associating the tracking data with a particular identified object (e.g., a person):

[T]he monitoring unit 10 merges and stores the identification data and the tracking data of each monitored object to form monitoring data for each monitored object. Before the identification data and the tracking data for each monitored object is merged, the monitoring system 100 interprets this data as representing tracking data for an object assigned the unique tracking identifier X and as identification data for an object identified as a person named John Smith. After the identification data and the tracking data for each monitored object is merged, the monitoring system 100 interprets this data as representing tracking data and identification data for a person named John Smith.

(Ex. 1001, 4:52-64.)

For the reasons discussed above, the tracking and analysis module 3910 in which identification and tracking data is associated with each item and stored and indexed discloses “**merging and storing said identification data and said tracking data of each monitored object to form monitoring data for each monitored object.**” (Ex. 1002 ¶¶70-71.)

v. **[17.d] “comparing new content of said monitoring data of a monitored object with prior content of said monitoring data of said monitored object.”**

Zanovitch discloses this limitation. (Ex. 1002 ¶¶72-73.) Zanovitch discloses that the tracking and analysis module 3910 includes “an analysis module 3916.” (Ex. 1006, 18:63-67, Fig. 39; *see also id.*, 21:36-44.) The analysis module 3916 processes the baggage identification and tracking information to compare new content of that information to prior content to determine if for example, the content of a passenger’s carry-on baggage has changed between an initial pass through a threat scanning machine (TSM 106) and subsequent analyses at other TSMs 106 such as those located at a boarding gate or a destination airport (“**comparing new content of said monitoring data of a monitored object with prior content of said monitoring data of said monitored object**”). (*Id.*, 18:63-67, 20:11-14, 21:36-44, 21:63-22:29, 24:34-44.) Zanovitch gives an example application of this comparison used for detecting a change in passenger’s carry-on baggage at the boarding gate:

[T]he passenger tracking module 3914 and item tracking module 3912 can cooperate with, for example, threat scanning machines 106 that are placed at the entrance of the airplane and can collect information related to one or more of items and passengers immediately prior to boarding. The analysis module could then perform an analysis between when the baggage went through a

previous security checkpoint and the passenger/item bag as it is loaded onto the airplane. For example, a comparison can be made between the weight of a carry-on bag at the security checkpoint and the weight of the carry-on bag at the airplane.

(*Id.*, 24:34-44.) In the above example, the weight of the carry-on bag at the airplane is “**new content of said monitoring data of a monitored object,**” whereas the weight of a carry-on bag at the security checkpoint is “**prior content of said monitoring data of said monitored object.**” (Ex. 1002 ¶72.)

This is similar to the Figure 8 embodiment of the ’509 patent.

(Ex. 1002 ¶73; *see* Ex. 1001, 9:22-10:22, Fig. 8.) There, monitoring unit 10 compares passenger and baggage information at two different locations to determine that the passenger had two suitcases at a first location but only had one suitcase at a second location. (Ex. 1001, 9:22-10:22.)

2. Claim 18: “The method as recited in claim 17 further comprising: processing said monitoring data.”

Zanovitch discloses this limitation. (Ex. 1002 ¶74.) As discussed above in Section IX.A.1.v, the “analysis module 3916” analyzes the item information, and is thereby, “**processing said monitoring data.**” (*See also* Ex. 1006, 21:36-44 (“Once the item tracking module 3912 and passenger tracking module 3914 receive the item and/or the passenger identification, as well as information associated with that item and/or passenger, the analysis module 3916 analyzes

information associated with the item, such as contents, ... in an attempt to predict whether that item and/or passenger poses a threat.”.)

3. Claim 19: “The method as recited in claim 18 wherein said processing further includes: generating a message based on a result of said comparison of said new and said prior content.”

Zanovitch discloses this limitation. (Ex. 1002 ¶75.) For example, Zanovitch discloses that “[t]he alarm module 3918 works in cooperation with the analysis module 3916 to send an appropriate alarm upon the analysis module 3916 determining that an alert is required.” (Ex. 1006, 23:66-24:1; *see also id.* 10:30-67 (describing content of alarm message); 25:31-62 (describing steps S140-S160 of Fig. 40 regarding sending an alert based on comparison).) Such an alert can be based on the comparison of new and prior content of the monitoring data. (*See, e.g., id.*, 24:42-46 (“[A] comparison can be made between the weight of a carry-on bag at the security checkpoint and the weight of the carry-on bag at the airplane. If a difference exists, there may be sufficient cause to send an alert....”).)

To the extent “a message” means a written, printed, or displayed message, claim 19 also constitutes printed matter which is entitled to no patentable weight. *In re DiStefano*, 808 F. 3d 845, 848-851 (Fed. Cir. 2015). As such, claim 19 (and claim 26 that similarly recites “a message”) is not limiting and is unpatentable regardless of whether it is disclosed by the prior art.

4. Claim 14

i. [14.pre] “A computer-readable medium having stored therein a data structure comprising:”

To the extent limiting, Zanolvitch discloses the preamble of claim 14. (Ex. 1002 ¶76.) For example, Zanolvitch discloses that the identification and tracking data is stored and indexed in tracking and analysis module 3910 (“a **computer-readable medium having stored therein a data structure**”). (See *supra*, §IX.A.1.iv.) Zanolvitch further discloses that “the disclosed methods may be readily implemented in software executed on programmed general-purpose computer ...” or “implemented by physically incorporating the system and method into a software and/or hardware system.” (Ex. 1006, 32:45-56; *see also id.*, 4:24-58.) A POSITA would have recognized that a “programmed general-purpose computer” having a tracking and analysis module 3910 which stores and indexes identification data and tracking data discloses a “**computer-readable medium having stored therein a data structure**” (where the data structure is discussed below). (Ex. 1002 ¶76.) Additional details are discussed below for the remaining limitations of claim 14.

ii. [14.a] “A plurality of monitoring data groups, each monitoring data group associated with one of a plurality of monitored objects, wherein each monitoring data group includes:”

Zanolvitch discloses this limitation. (Ex. 1002 ¶¶77-78.) For example, item tracking module 3912 of the tracking and analysis module 3910 receives both the

item identification and tracking data associated with that item (e.g., the weight of the item at the security checkpoint). (Ex. 1006, 20:39-55, 21:36-43.) This “item information” for each item is “stored and indexed” in the tracking and analysis module 3910 for later access by the analysis module 3916 therein (“**each monitoring data group associated with one of a plurality of monitored objects**”). (Ex. 1006, 21:1-4, 21:36-43, 21:63-22:3; *see also supra*, §§IX.A.1.iv-v.) For example, the tracking and analysis module 3910 stores the “weight of a carry-on bag” at the security check-point, which is later compared to the weight of that same bag at the airplane by the analysis module 3916. (*Id.*, 24:34-44.)

Each bag is separately identified. (*Id.*, 19:62 (“Each item also needs to be identifiable.”), 20:33-37; Ex. 1002 ¶78.) So, a POSITA would have understood that the “stored and indexed” “item information” for each bag forms its own data group in tracking and analysis module 3910, where the bag identification and tracking information forms a “**data group associated with one of a plurality of monitored objects**” (e.g., one of a plurality of bags), and so the data groups for a plurality of bags in an airport setting (where it is well understood that more than one passenger would have a bag) would correspond to “**a plurality of monitoring data groups.**” (Ex. 1002 ¶78.)

- iii. **[14.b] “identification data associated with a monitored object, wherein said identification data is generated when said monitored object is located at an identification gateway of a monitored environment;”**

Zanovitch discloses this limitation for the same or similar reasons as discussed above for limitation 17.a. (Ex. 1002 ¶79; *supra*, §IX.A.1.ii.)

- iv. **[14.c] “tracking data associated with said monitored object, wherein said tracking data is generated when said monitored object is located within said monitored environment; and”**

Zanovitch discloses this limitation for the same or similar reasons as discussed above for limitation 17.b. (Ex. 1002 ¶80; *supra*, §IX.A.1.iii.)

- v. **[14.d] “merged data that is based on the comparison of new content of monitoring data of a monitored object and prior content of said monitoring data of said monitored object.”**

Zanovitch discloses this limitation for the same or similar reasons as discussed above for limitations 17.c and 17.d. (Ex. 1002 ¶¶81-83; *supra* §§IX.A.1.iv-v.) To the extent this limitation could be read to require that the merged data reflects the result of the comparison, Zanovitch discloses that interpretation as well. (Ex. 1002 ¶81.) For example, as discussed for limitation 17.d and claim 19, Zanovitch discloses comparing the weight of a carry-on bag at two different locations and sending an alarm based on the comparison. (*Supra*, §§IX.A.1.v, IX.A.3; Ex. 1006, 23:66-24:1 (“The alarm module 3918 works in cooperation with the analysis module 3916 to send an appropriate alarm upon the

analysis module 3916 determining that an alert is required.”); 24:42-46 (“[A] comparison can be made between the weight of a carry-on bag at the security checkpoint and the weight of the carry-on bag at the airplane. If a difference exists, there may be sufficient cause to send an alert...”); 25:31-62 (describing steps S140-S160 of Fig. 40 regarding sending an alert based on comparison).)

Zanovitch discloses that following the determination to issue an alert about “a suspicious item, information about the item can be retrieved and displayed each time the item identifier is detected. For example, the alert information or a derivative thereof can be displayed” (*Id.*, 25:31-56.) That information is **based on the comparison of new content of monitoring data and prior content of said monitoring data** for the item (**monitored object**), and data is “**merged**” at least because the alert information resulting from the comparison is associated with “the item identifier” (*id.*, 25:45-47) (e.g., identification data). (Ex. 1002 ¶82; *see also* Ex. 1006, 10:30-67 (describing content of alarm message including “[i]dentification of the bag”).)

This is also consistent with the only potentially corresponding disclosure in the ’509 for merged “data that is based on the comparison.” (Ex. 1002 ¶83.) The ’509 patent gives an example of comparing the monitoring data at two different locations for a passenger in an airport. (Ex. 1001, 10:8-22, Fig. 8.) In that example, monitoring data for the monitored object at two different times is

compared and an alert is generated based on that comparison when, in the example given, the number of suitcases associated with the passenger changes. (*Id.*) Thus, to the extent limitation 14.d could be interpreted as directed to that disclosure, Zanolitch discloses this limitation. (Ex. 1002 ¶83.)

5. Claim 15: “The computer-readable medium as recited in claim 14 wherein said identification data is generated by an identification system.”

Zanolitch discloses claim 15 for the same or similar reasons as discussed for limitation 17.a. (Ex. 1002 ¶84; *supra*, §IX.A.1.ii.)

6. Claim 16: “The computer-readable medium as recited in claim 14 wherein said tracking data is generated by a tracking system.”

Zanolitch discloses claim 16 for the same or similar reasons as discussed for limitation 17.b. (Ex. 1002 ¶85; *supra*, §IX.A.1.iii.)

7. Claim 24

i. [24.pre] “A computer-readable medium comprising computer-executable instructions stored therein for performing a method of monitoring an object, said method comprising:”

To the extent limiting, Zanolitch discloses the preamble of claim 24 for the same or similar reasons discussed for claim elements 14.pre and 17.pre. (Ex. 1002 ¶86; *supra*, §§IX.A.1.i, IX.A.4.i.) Zanolitch further discloses that “the disclosed methods may be readily implemented in software executed on programmed general-purpose computer ...” or “implemented by physically incorporating the

system and method into a software and/or hardware system.” (Ex. 1006, 32:45-56; *see also id.*, 4:24-58.) The software constitutes “**computer-executable instructions.**”

- ii. [24.a] “**generating identification data associated with each monitored object located at an identification gateway of a monitored environment, wherein said generating identification data is performed by an identification system;**”

Zanovitch discloses this limitation for the same or similar reasons discussed for claim limitation 17.a. (Ex. 1002 ¶87; *supra*, §IX.A.1.ii.)

- iii. [24.b] “**generating tracking data associated with each monitored object located within said monitored environment, wherein said generating tracking data is performed by a tracking system;**”

Zanovitch discloses this limitation for the same or similar reasons discussed for claim limitation 17.b. (Ex. 1002 ¶88; *supra*, §IX.A.1.iii.)

- iv. [24.c] “**merging and storing said identification data and said tracking data of each monitored object to form monitoring data for each monitored object; and**”

Zanovitch discloses this limitation for the same or similar reasons discussed for claim limitation 17.c. (Ex. 1002 ¶89; *supra*, §IX.A.1.iv.)

- v. [24.d] “**comparing new content of said monitoring data of a monitored object with prior content of said monitoring data of said monitored object.**”

Zanovitch discloses this limitation for the same or similar reasons discussed for claim limitation 17.d. (Ex. 1002 ¶90; *supra*, §IX.A.1.v.)

8. **Claim 25: “The computer-readable medium as recited in claim 24 wherein said method further comprises: processing said monitoring data.”**

Zanovitch discloses this limitation for the same or similar reasons discussed for claim 18. (Ex. 1002 ¶91; *supra*, §IX.A.2.)

9. **Claim 26: “The computer-readable medium as recited in claim 25 wherein said processing further includes: generating a message based on a result of said comparison of said new and said prior content.”**

To the extent limiting, Pederson discloses this limitation for the same or similar reasons discussed for claim 19. (Ex. 1002 ¶92; *supra*, §IX.A.3.)

B. Ground 2: Zanovitch and Johnson Render Obvious Claims 14-19, and 24-26

1. Claim 17

Zanovitch discloses all limitations of claim 17 as discussed above, including merging and storing the identity (“**identification data**”) and the weight (“**tracking data**”) of each item such as a carry-on bag (“**each monitored object**”). (*Supra*, §IX.A.1.iv.) Zanovitch’s disclosure is consistent with the ’509 patent, which explains that “merging” is simply assigning or linking the identification data to the tracking data as opposed to using a tracking identifier that is unrelated to the monitored object’s identity. (*See id.*; Ex. 1001, 4:52-64.) Although Zanovitch discloses claim 17, to the extent Patent Owner argues, or the Board finds, that Zanovitch does not disclose “**merging and storing said identification data and said tracking data of each monitored object to form monitoring data for each**

monitored object” (limitation 17.c), Johnson discloses or suggests that feature and it would have been obvious in view of Johnson to configure Zanolitch to form monitoring data for each monitored object as claimed. (Ex. 1002 ¶¶93-100.) Thus, Zanolitch in view of Johnson discloses and/or suggests, and renders obvious, claim 17. (*Id.* ¶93.)

Johnson relates to monitoring identification and location information and is therefore in the same or a similar field to Zanolitch and the ’509 patent. (*Id.* ¶94.) The ’509 patent relates to monitoring an object “with identification and tracking data.” (Ex. 1001, Abstract.) The ’509 patent gives example applications for object monitoring but does not limit such monitoring to any specific application or purpose. (*See generally* Ex. 1001.) As detailed below, Johnson monitors a receiver device, including using its identity and tracking information to decide when to push content to the receiver for various purposes. (Ex. 1002, ¶94; *see, e.g.*, Ex. 1008, 2:65-4:7 (describing exemplary applications for using tracking and identification to push content to the device).) Thus, the ’509 Patent and Johnson both relate to using identification and tracking data for various purposes and are in the same or a similar field.

Johnson discloses a system where content is delivered to a device based on information such as the device’s “location and/or direction change ... or movement exceeding a movement tolerance.” (Ex. 1008, Abstract; *see also id.*, 1:19-26, 2:10-

37 (disclosing using “location, direction, location and direction, proximity to a location, state change, or location and/or direction relative to a previous location and/or direction, or combinations thereof” to determine whether to push content to a receiving data processing system (“RDPS”)), 7:30-31 (“As the RDPS moves about, positional attributes are monitored for determining a situational location.”).) With respect to Johnson’s figure 3B, Johnson discloses an example series of steps where (a) an RDPS’s location is determined (blocks 312-318), (b) its direction and distance traveled are determined by comparing current versus previous locations (blocks 324 and 326), (c) that tracking data is used to decide whether to push content to the RDPS (blocks 328, 330, and 332), (d) after which the location history of the RDPS is updated with a new entry (block 334). (Ex. 1008, 9:10-10:19, Fig. 3B.) These steps are continuously repeated. (*Id.*)

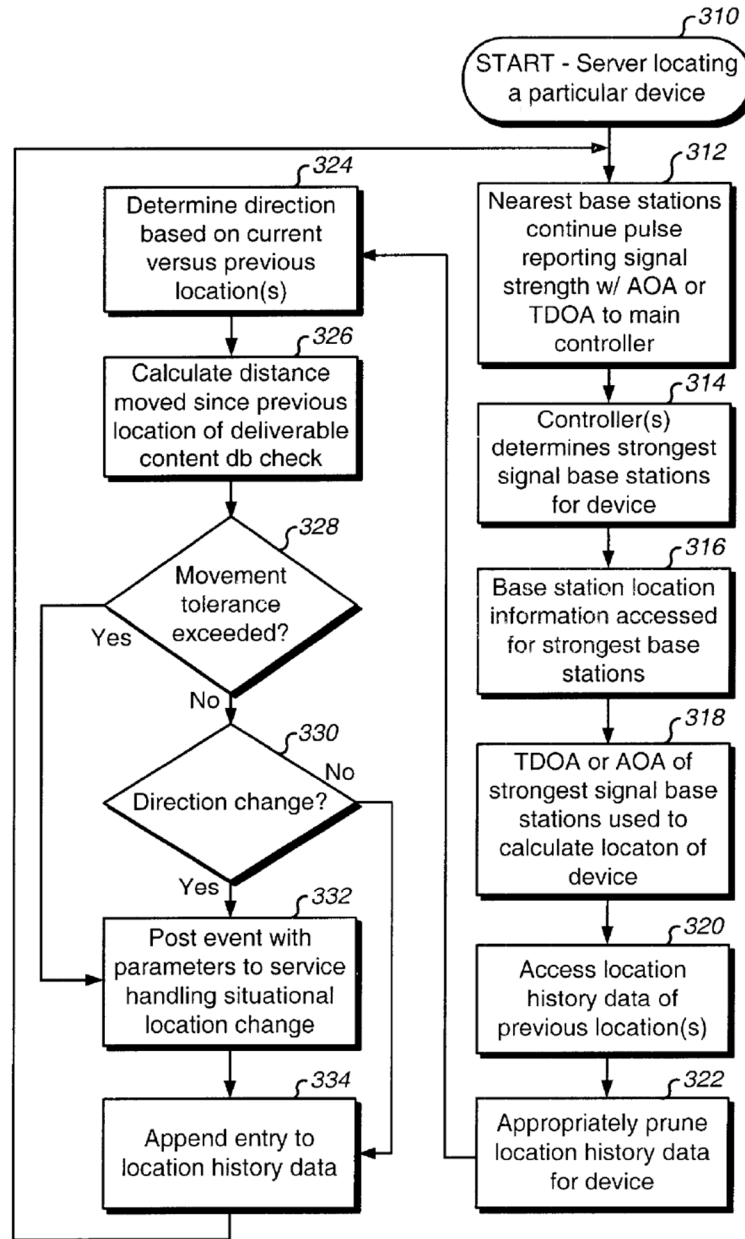
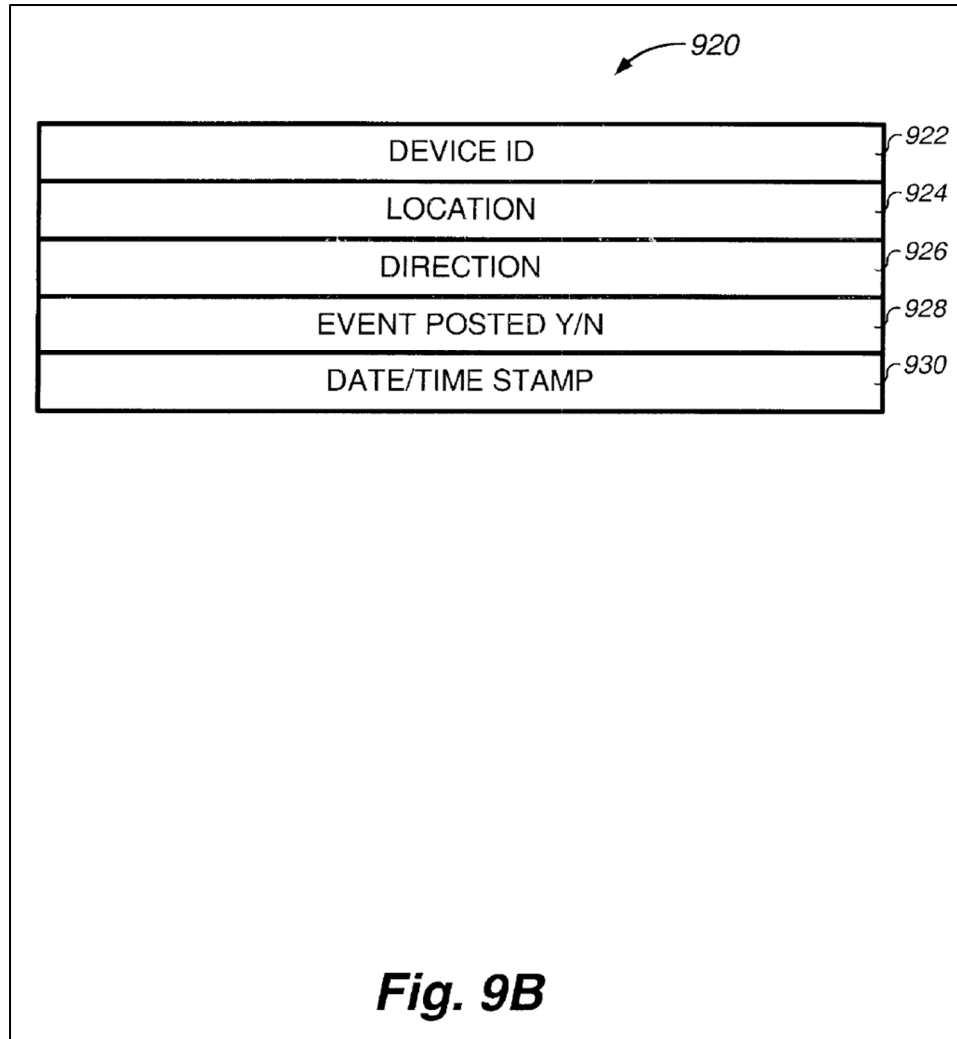


Fig. 3B

(Ex. 1008, Fig. 3B.)

Johnson discloses that the location history data preferably takes the form shown in its figure 9B (excerpted below). (Ex. 1008, 10:8-13; 15:60-61 (“FIG. 9B depicts a preferred embodiment of a data record in the location history data of the

present invention.”.) That record tracks the travels of a particular RDPS. (*Id.*, 15:60-64.) The location history data associates a device ID (field 922) with the tracking information for that device (e.g., fields 924, 926, and 930) and saves them together in the same data record. (*Id.*, 15:60-16:4; Fig. 9B; Ex. 1002 ¶96.) That device ID 922 “may be a **telephone** #, physical or logical address, or some other unique handle to the RDPS.” (*Id.*, 15:20-22, 63-64; *see also id.*, 7:39-41 (“Wireless devices (i.e. RDPS) are known by a unique identifier, for example a **caller id**, device identifier, or like appropriate unique handle.”).) A POSITA would have understood that information, including at least a telephone number (or caller ID), to be identification information associated with an RDPS (e.g., a mobile device having that telephone number). (Ex. 1002 ¶96.)



(Ex. 1008, Fig. 9B.)

Accordingly, Johson discloses that for each RDPS (“**for each monitored object**”), the device ID such as a phone number or caller ID (“**identification data**”) is stored in a location history data record with the with location and direction information (“**tracking data**”) for that RDPS (“**merging and storing said identification data and said tracking data of each monitored object to form monitoring data**”). (Ex. 1002 ¶97.)

A POSITA implementing Zanovitch's systems and methods would have had good reason to consider Johnson's data structure. (Ex. 1002 ¶98.) For instance, such a person would have recognized that merging and storing together the identification data and tracking data for a monitored object would ensure that the tracking data was associated with a known identified object. (*Id.*) That would allow the tracking data for the object to be updated over time, which would be less reliable for objects that had a random identifier assigned. (*Id.*) For example, if a monitored object is identified, and that identification data is merged with the tracking data for the object as Johnson discloses, such merging would readily permit the system to determine if a future (or past) monitored object was the same object by comparing the identification data. (*Id.*) Having that common identification data merged and stored with the tracking data would allow a single record of the object's tracking information to be maintained even if the object is intermittently seen (as opposed to continuously tracked) because each time it appears and is identified, its prior tracking data could be retrieved and updated based on the static identification data. (*Id.*)

A POSITA also would have understood that merging the identification data and tracking data simplifies data management and increases system efficiency. (*Id.* ¶99.) For example, such merging (as disclosed by Johnson) would likely reduce the number of database lookups required because there is no need to join

separate tables (e.g., one with identification data and one with tracking data), which would have the benefits of reducing memory needs, improving query speeds, and reducing communication payloads. (*Id.*) Combining identification data with tracking data would also allow for immediate attribution of tracking data to a known identified object without any further steps or database lookups required because that data is merged and stored together. (*Id.*)

Given that Johnson discloses such merged identification data and tracking data, this would have been a predictable optimization using a known data structure. (*Id.* ¶100.) As such, Johnson provides a known solution for storing identification data and tracking data (i.e., merged into a single record), and a POSITA would have been motivated to implement that data structure in Zanolitch's system for the reasons discussed above. (*Id.*) A POSITA would have had a reasonable expectation of success because, for example, adopting a merged data structure like that disclosed by Johnson would not require a wholesale redesign of Zanolitch's system given that Zanolitch already obtains, associates, and uses identification data and tracking data for each monitored object. (*Id.*) Such modifications would have been well within a POSITA's skills and abilities because they are merely applying known data structures and storage methodologies to known systems and would have yielded predictable results. Accordingly, it would have been obvious to implement a merged data structure like Johnson discloses in Zanolitch. (*Id.*)

Zanovitch discloses or suggests the remaining limitations of claim 17 for the same or similar reasons as discussed above in Ground 1. (*Supra*, §IX.A.1.)

2. Claim 14

Zanovitch discloses all limitations of claim 14 as discussed above, including merging and storing the identity (“**identification data**”) and the weight (“**tracking data**”) of each item such as a carry-on bag (“**monitored object**”). (*Supra*, §IX.A.4.) Those disclosures are consistent with the ’509 patent. (*See, e.g., supra*, §§IX.A.1.iv, IX.A.4, IX.B.1.) Although Zanovitch discloses claim 14, to the extent Patent Owner argues, or the Board finds, that Zanovitch does not disclose one or more of the limitations regarding merging identification data and tracking data in monitoring data groups, Johnson discloses or suggests those features, and it would have been obvious in view of Johnson to configure Zanovitch to implement the claimed data structure. (Ex. 1002 ¶¶101-102; *see supra*, §IX.B.1.) Thus, Zanovitch in view of Johnson discloses and/or suggests, and renders obvious, claim 14. (Ex. 1002 ¶101.)

For example, as discussed above for claim 17, it would have been obvious in view Johnson of to implement a data structure in Zanovitch where the identification data for each monitored object is merged with the tracking data for that monitored object, and stored in a data record together such that each object has its own data record containing its merged identification and tracking data. (*Supra*,

§IX.B.1.) Each such record would correspond to a “**monitoring data group**” (limitation 14.a), which, for the same or similar reasons as explained for claim 17 (*supra*, §IX.B.1) includes “**identification data associated with a monitored object**” (limitation 14.b) and “**tracking data associated with said monitored object**” (limitation 14.c) that is “**merged data**” (limitation 14.d) stored together in the same record. (Ex. 1002 ¶102.) Accordingly, for the same or similar reasons as discussed for claim 17, the Zanolvitch-Johnson combination renders obvious claim 14. (*Id.* ¶102.)

3. Claim 24

As discussed above in Ground 1, Zanolvitch discloses claim 24. (*Supra*, §IX.A.7.) But to the extent Zanolvitch does not explicitly disclose claim 24, Zanolvitch in view of Johnson discloses and/or suggests, and renders obvious, claim 24. (Ex. 1002 ¶103.) As discussed in Ground 1, the analysis for claims 14 and 17 apply to the limitations of claim 24. (*Supra*, §IX.A.7 (demonstrating how Zanolvitch discloses claim 24 with reference to the analysis for claims 14 and 17).) Accordingly, for the same or similar reason discussed in Ground 1 and for claims 14 and 17 in Ground 2, the Zanolvitch-Johnson combination renders obvious claim 24. (*Supra*, §§IX.A.7, IX.B.1-2.)

4. Claims 15, 16, 18, 19, 25, 26

Zanovitch discloses or suggests and renders obvious the limitations of claims 15, 16, 18, 19, 25, and 26 for the same or similar reasons discussed in Ground 1. (Ex. 1002 ¶104; *supra*, §§IX.A.2-3, 5-6, 8-9.) These are dependent claims that each depend (directly or indirectly) from one of independent claims 14, 17, and 26 discussed above. The combination of Zanovitch and Johnson discussed above for those independent claims does not change how Zanovitch discloses the limitations of these dependent claims. (Ex. 1002 ¶104.) Accordingly, the Zanovitch-Johnson combination renders obvious claims 15, 16, 18, 19, 25, and 26. (*Id.*)

C. Ground 3: Pederson Anticipates Claims 14-19, and 24-26

1. Claim 17

i. [17.pre] “A method of monitoring an object, said method comprising:”

To the extent limiting, Pederson discloses the preamble of claim 17. (Ex. 1002 ¶105.) For example, Pederson discloses a system that performs a method of identifying and tracking (“**monitoring**”) a vehicle or person (“**an object**”) as discussed for the below claim limitations. (*Id.*) For example, Pederson discloses “[a]n intelligent video/audio observation and identification database system.” (Ex. 1005, abstract; *see also e.g., id.*, 7:59-9:17.) The system can utilize cameras 12, input devices 18, computers 22 and 60 and other devices (such as

shown in Pederson's Figure 1) for monitoring vehicles and/or individuals within a security zone, as discussed for the below limitations of claim 1 (“**[a] method of monitoring an object**”). (*Id.*, 7:59-9:17; Ex. 1002 ¶105.)

- ii. **[17.a] “generating identification data associated with each monitored object located at an identification gateway of a monitored environment, wherein said generating identification data is performed by an identification system;”**

Pederson discloses this limitation. (Ex. 1002 ¶¶106-108.) Pederson discloses at least one optical sensor (camera) 12 and/or other inputs 18 such as a fingerprint (or thumbprint) scanner 20, palm scanner, and microphone 19 at an entry gate (e.g., a first security zone), which are used to identify vehicles and individuals entering a monitored area comprising one or more security zones. (Ex. 1005, 7:65-67 (“The system 10 may also include other input devices 18, such as fingerprint scanners, palm scanners, microphones, retinal scanners, and the like.”), 14:5-18, Fig. 2 (showing entry gate with optical input devices 12 and input device 18), Fig. 7.) The output from those various identification devices is input into computer 22 as shown in, for example, figure 1. (Ex. 1005, Fig. 1; *see also*

e.g., id., 9:41-43, 9:52-55 (“the computer 22 receives data independently from one or more input devices 12, 18”), Fig. 7.)⁷

For example, “FIG. 2 depicts an entry point or security checkpoint 52, which may comprise a zone 50.” (Ex. 1005, 9:18-19.) At checkpoint 52, using input devices 12 and 18, the system captures identification information about the vehicle and its occupants, either of which can correspond to a “**monitored object**.” (See Ex. 1005, 9:19-32 (“The intelligent observation and identification database system 10 preferably utilizes an observation post or checkpoint 52 at an entrance or an exit to a secured zone 50 ...”); 9:33-36 (“As a vehicle 70 approaches the checkpoint 52, the intelligent video/audio observation and identification database system 10 desirably employs a plurality of input devices 12, 18 to record images related to the vehicle 70 and its occupants 56.”); *see also id.*, 14:5-18, 17:8-13, FIGs. 1, 2, 7.) That captured identification information is analyzed to identify the vehicle and occupants entering a security zone 50. (See, *e.g.*, Ex. 1005, 7:13-19, 14:19-23,

⁷ Pederson generally labels video input devices or cameras as “12” and other input devices as “18,” but sometimes uses different numbering to indicate specific types of input devices 18, such as “microphone 19” and “fingerprint scanner 20.” In this Petition, as in Pederson, those other input devices are treated as a subset of the set of input devices “18.”

14:46-59 (“system 10 may be capable of automatically identifying vehicle occupants 56 and other personnel 56 entering into the security zone 50”).) For example, “an image of the vehicle 70 license plate 54 is recorded,” which is used by “computer 22 ... to determine the license plate 54 number.” (*Id.*, 10:40-48.)

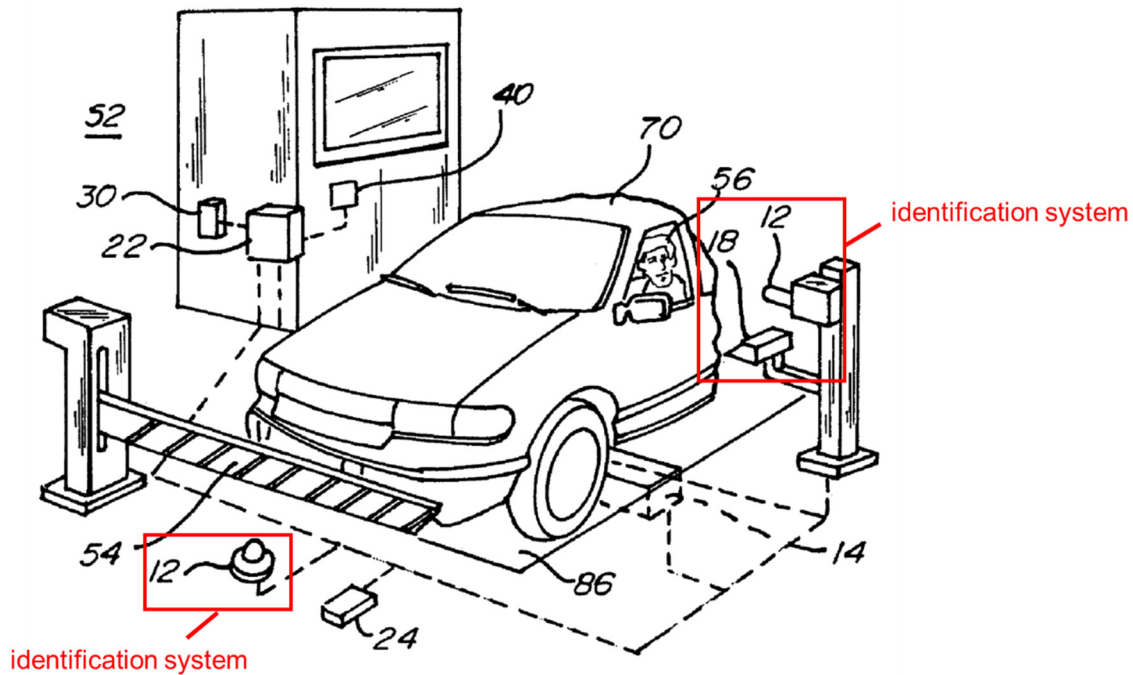


Fig. 2.

(Ex. 1005, Fig. 2 (annotated); Ex. 1002 ¶107.)

Therefore, sensors 12 and 18 alone or in combination with computer 22 constitute an “**identification system**” that “**generat[es] identification data**” (e.g., license plate number) “**associated with each monitored object**” (e.g., vehicle 70) “**located at an identification gateway of a monitored environment**” (e.g., entry gate of zone 50). (Ex. 1002 ¶108.)

- iii. **[17.b] “generating tracking data associated with each monitored object located within said monitored environment, wherein said generating tracking data is performed by a tracking system;”**

Pederson discloses this claim limitation. (Ex. 1002 ¶¶109-110.) As explained below, Pederson discloses additional sensors such as one or more cameras 12 within a security zone 50 (“**said monitored environment**”), where those cameras are used to track the identified vehicles or persons after they have passed through the gate into the security zone (“**generating tracking data associated with each monitored object located within said monitored environment, wherein said generating tracking data is performed by a tracking system**”).

Pederson discloses “[t]he system may track individuals or vehicles within a zone or between zones.” (Ex. 1005, Abstract.) And further discloses that such tracking is done using cameras 12, which output their data for each monitored person or vehicle within a security zone to computer 22. (*See, e.g.*, Ex. 1005, 7:47-52 (“The tracking of vehicles within the security zone is accomplished through the use of a plurality of optical devices which may be cameras, digital cameras, and/or other types of recording devices which are either mounted in a static and/or active position for recording of a specific field adjacent to, or within, the security zone.”), 8:25-56 (describing setting up optical input devices 12 to observe a security zone 50 and connecting those devices to computer 22), 18:55-65 (“The intelligent

audio/visual observation and identification database system 10 may further be arranged to track vehicles 70 or individuals 56 as they move from zone 50 to zone 50.... Over time, the system 10 may learn typical paths, times and zones 50 where specific vehicles 70 and individuals 56 spend their time”), 19:13-17 (tracking person 56 within zone 50 using video feeds), 19:34-39 (“A computer 22 may further track vehicles 70 or individuals 56 within the security zone 50 In addition, the computer 22 will track the subsequent repositioning of a vehicle 70 or individual 56 within a security zone 50.”).) Thus, cameras 12, alone or in combination with computer 22, within the security zone 50 disclose a “**tracking system,**” where their tracking activity (e.g., location of vehicle within zone(s) 50, path taken by vehicle in zones 50) constitutes “**tracking data**” associated with the “**monitored object**” (e.g., vehicle 70). (Ex. 1002 ¶110.)

iv. [17.c] “**merging and storing said identification data and said tracking data of each monitored object to form monitoring data for each monitored object; and**”

Pederson discloses this limitation. (Ex. 1002 ¶¶111-112.) Pederson discloses that “[t]he computer 22 for the intelligent audio/visual observation and identification database system 10 implements the recording of data to build vehicle 70/individual 56 specific files or histories, including images representative of activity within a security zone 50.” (Ex. 1005, 19:22-26.) Such data is stored in database 30 (database system 10 refers to the entire apparatus/system, not a storage

database). (*See, e.g.*, Ex. 1005, 8:59-62 (“The computer 22 will then accumulate data and build a database 30, 62 for observed vehicles 70 and individuals 56 within the individual security Zone 50.”).) Thus, computer 22 and database 30 together create and store a vehicle-specific and/or individual-specific file history for each identified and tracked vehicle or person (where each vehicle and person corresponds to a “**monitored object**”). (Ex. 1002 ¶111.)

To be sure, Pederson’s vehicle 70/individual 56 specific files include both the tracking information from within a security zone (Ex. 1005, 19:22-26) and identification information obtained at the gate (*id.*, 17:8-13). Pederson discloses that information “within the database 30 pertaining to the vehicle 70 or individual 56” is stored using a classification system “such as by license plate 54.” (Ex. 1005, 16:35-38.) Accordingly, a POSITA would have understood that the identification and tracking information for each monitored object is “**merg[ed]**” to form “**monitoring data for each monitored object.**” (Ex. 1002 ¶112.) This is consistent with the description of merging data in the ’509 patent:

Before the identification data and the tracking data for each monitored object is merged, the monitoring system 100 interprets this data as representing tracking data for an object assigned the unique tracking identifier X and as identification data for an object identified as a person named John Smith. After the identification data and the tracking data for each monitored object is merged, the

monitoring system 100 interprets this data as representing tracking data for a person named John Smith.

(Ex. 1001, 4:55-64.) In other words, Pederson merges the separate identification and tracking data for each monitored object by using a classification such as a licence plate to associate the tracking data to the identified vehicle (in that example), similar to how the '509 patent merges the tracking data for a person by associating it to the identified person's name. (Ex. 1002 ¶112.)

v. [17.d] **“comparing new content of said monitoring data of a monitored object with prior content of said monitoring data of said monitored object.”**

Pederson discloses this limitation. (Ex. 1002 ¶¶113-114.) Pederson discloses that “computer 22 may... compare current vehicle 70 or individual 56 activity against previously stored and recorded activity data” (**“comparing new content of said monitoring data of a monitored object with prior content of said monitoring data of said monitored object”**). (Ex. 1005, 19:26-29; *see also id.*, 16:50-52 (“The computer 22 will next compare the observed data to the prerecorded and stored data to implement a search for any discrepancies.”), 18:28-33 (“The currently available computer 22 hardware and software enable the intelligent audio/visual observation and identification database system 10 to identify and track vehicles 70 and/or individuals 56 within a security zone 50 and compare the observed data in real time to previously stored data to assess the risk

of criminal activity.”); 21:45-22:12 (describing one way computer 22 learns prior activity patterns and compares them to current activity); Ex. 1002 ¶113.)

In one embodiment, Pederson discloses that computer 22 compares new monitoring data to prior monitoring data to look for abnormal behavior. (Ex. 1005, 19:18-33.) Such a comparison can be done by, for example, normalizing the previously recorded data obtained from monitoring individual 56 and/or vehicle 70 and comparing the current data for that individual/vehicle to the normalized data that represents their historic actions. (*Id.*, 19:18-26; *see also id.*, 19:26-33; *see also id.*, 9:46-55 (“the computer 22 receives data independently from one or more input devices 12, 18 for analysis against pre-stored and/or prerecorded data in the database 30 related to the vehicle 70 and/or individual 56”), 16:50-55; Ex. 1002 ¶114.) For example, Pederson discloses that:

The computer 22 for the intelligent audio/visual observation and identification database system 10 preferably includes software to search for discrepancies from previously normalized data representative of historic actions related to an individual 56 and/or a vehicle 70. The computer 22 for the intelligent audio/visual observation and identification database system 10 implements the recording of data to build vehicle 70/individual 56 specific files or histories, including images representative of activity within a security zone 50. ***The computer 22 may therefore compare current vehicle 70 or individual 56***

activity against previously stored and recorded activity data to establish standard deviations or thresholds which may, in turn, trigger a signal or warning if current conduct is outside acceptable parameters and warrants further investigation by surveillance, security, and/or law enforcement officers.

(Ex. 1005, 19:18-33 (emphasis added).)

2. Claim 18: “The method as recited in claim 17 further comprising: processing said monitoring data.”

Pederson discloses this claim because computer 22 processes the monitoring data. (Ex. 1002 ¶115; *supra*, §IX.C.1.v.)

3. Claim 19: “The method as recited in claim 18 wherein said processing further includes: generating a message based on a result of said comparison of said new and said prior content.”

Pederson discloses this claim. (Ex. 1002 ¶116.) For example, Pederson discloses generating a signal or warning (e.g., “**a message**”) based on a result of comparing new content of the monitoring data for a particular vehicle or individual with prior monitoring data for that same vehicle or individual (“**based on a result of said comparison of said new and said prior content**”). (Ex. 1005, 16:50-55 (“If any threshold discrepancy is identified, *a signal will be communicated* to a security, surveillance, or law enforcement officer to initiate a more detailed investigation.”), 19:18-33 (“The computer 22 may therefore compare current vehicle 70 or individual 56 activity against previously stored and recorded activity

data to establish standard deviations or thresholds which may, in turn, **trigger a signal or warning** if current conduct is outside acceptable parameters and warrants further investigation by surveillance, security, and/or law enforcement officers.”); *see also id.*, 20:5-15 (“computer 22 automatically initiates comparisons to search for discrepancies between observed and stored data as related to a variety of thresholds to **issue a warning signal** upon automatic detections of discrepancies”).) The comparison of new and prior content is described in detail above for claim limitation 17.d. (*Supra*, §IX.C.1.v.) A POSITA would have understood that such a warning or signal could have been communicated using monitor 40. (Ex. 1002 ¶116; *see, e.g.*, Ex. 1005, 7:63-64 (“output device 40, such as a monitor”), 16:56-62 (“if the computer 22 discovers any alerting information resulting from the database 30 search... the system may issue an alert to security personnel... upon a monitor 40”), Fig. 1.)

To the extent “**a message**” means a written, printed, or displayed message, claim 19 constitutes printed matter which is entitled to no patentable weight. *In re DiStefano*, 808 F. 3d 845, 848-851 (Fed. Cir. 2015). As such, claim 19 (and claim 26 that similarly recites “**a message**”) is not limiting and is unpatentable regardless of whether it is disclosed by the prior art.

4. Claim 14

i. [14.pre] “A computer-readable medium having stored therein a data structure comprising:”

To the extent limiting, Pederson discloses the preamble of claim 14.

(Ex. 1002 ¶117.) For example, Pederson discloses that “[s]oftware is preferably loaded onto computer 22” to execute the system’s various functions (Ex. 1005, 8:34-48), including “processing capability from static optical devices 12 such as cameras, where the software may be used to track a person 56 or vehicle 70 within a zone 50” (*id.*, 18:34-39; *see also id.*, 25:26-35) and when entering or exiting a zone (*id.*, 16:16-29), and “to search for discrepancies from previously normalized data representative of historic actions related to an individual 56 and/or a vehicle 70” (*id.*, 19:18-33; *see also id.*, 21:45-22:12, 25:36-26:12). Pederson also discloses “a database 30, which may be an evolving database, which may be located inside the computer 22” (*id.*, 7:61-64), that is “updated according to data saved by the system” (8:13-15) such as data accumulated from input devices 12 and 18 and used “to build a database 30 ... for observed vehicles 70 and individuals 56” (8:56-62; *see also* 7:24-30, 9:19-26, 9:46-10:4, 16:19-21 (“Each time an individual 56 or vehicle 70 enters or exits a security zone 50, the system 10 may record in the database 30 the time and location of the arrival or exit.”)). Such data pertaining to each vehicle 70 and individual 56 is stored in database 30 “based any desired classification system, such as by license plate 54, and other retrieved identification

information.” (Ex. 1005, 16:30-38.) A POSITA would have understood that such software and data stored in database 30 comprises “**a data structure**” stored on “**a computer-readable medium**” (e.g., a hard drive or other memory). (Ex. 1002 ¶117.)

ii. [14.a] “**A plurality of monitoring data groups, each monitoring data group associated with one of a plurality of monitored objects, wherein each monitoring data group includes:**”

Pederson discloses or suggests and renders obvious this limitation. (Ex. 1002 ¶118.) For example, Pederson discloses collecting data within database 30 corresponding to various vehicles and persons (“**a plurality of monitored objects**”) at a gate or checkpoint and within security zones as discussed above. (*See supra*, §§IX.C.1.ii-iv.) That data is saved and categorized using a classification system such as “by license plate” (Ex. 1005, 16:30-38), where a POSITA would have understood that, for example, each individual license plate corresponds to a particular vehicle and so Pederson discloses or suggests the data for each monitored person or vehicle is grouped or associated by such person/vehicle-specific identification information (“**each monitoring data group associated with one of a plurality of monitored objects**”) (Ex. 1002 ¶118). (*See also supra*, §§IX.C.1.ii-iv.) Pederson discloses or suggests this claim limitation for the same or similar reasons as those previously discussed. (*See supra*, §§IX.C.1.ii-iv; Ex. 1002 ¶118.)

- iii. **[14.b] “identification data associated with a monitored object, wherein said identification data is generated when said monitored object is located at an identification gateway of a monitored environment;”**

Pederson discloses this limitation for reasons similar to those discussed above in Section IX.C.1.ii. (Ex. 1002 ¶119.) As discussed above, Pederson discloses generating identification data for a person or vehicle at a gate or security checkpoint such as that depicted in Figure 2 (“**an identification gateway of a monitored environment**”), which is saved in database 30. (*See supra*, §§IX.C.1.ii.) Pederson discloses or suggests this claim limitation for the same or similar reasons. (*Id.*; Ex. 1002 ¶119.)

- iv. **[14.c] “tracking data associated with said monitored object, wherein said tracking data is generated when said monitored object is located within said monitored environment; and”**

Pederson discloses this limitation for reasons similar to those discussed above in Section IX.C.1.iii. (Ex. 1002 ¶120.) For example, and as discussed above, Pederson discloses generating tracking data for a person or vehicle (“**associated with said monitored object**”) within a security zone 50 after they enter through a gate or security checkpoint (“**tracking data is generated when said monitored object is located within said monitored environment**”), which is saved in database 30. (*See supra*, §IX.C.1.iii.)

- v. [14.d] **“merged data that is based on the comparison of new content of monitoring data of a monitored object and prior content of said monitoring data of said monitored object.”**

Pederson discloses this limitation for reasons similar to those discussed above in Section IX.C.1.iv-v. (Ex. 1002 ¶121.) As discussed above, Pederson discloses “merging” and “comparing” new content of the monitoring data for a given monitored object (e.g., person or vehicle) with prior content of the monitoring data for the same object (e.g., **“merged data that is based on the comparison”**). (*See supra*, §§IX.C.1.iv-v.) In addition, Pederson discloses that the system 10 can learn and recognize repetitive patterns. (*See, e.g.*, Ex. 1005, 21:45-22:13.) As part of that process, “computer 22 for the intelligent audio/visual observation and identification database system 10 may be arranged to continuously compare each observed encounter to the collection of previously stored data to identify patterns and deviations from the patterns as previously recorded.” (*Id.*, 21:45-49.) In response to new data, “computer 22 will generally continue to store data, and therefore update the pattern, as detected by the input devices 12, 18. The computer 22 is preferably designed to recalculate a mean for the data following each additional data entry.” (*Id.*, 21:64-22:1.) One could also view the updated pattern as **merged data that is based on the comparison** at least because it is generated through comparing observed encounters (**new content monitoring**

data) with the previously stored encounter data (**prior content of said monitoring data**). (Ex. 1002, ¶121.)

5. Claim 15: “The computer-readable medium as recited in claim 14 wherein said identification data is generated by an identification system.”

Pederson discloses claim 15 for the same or similar reasons discussed for claim limitation 17.a. (Ex. 1002 ¶122; *supra*, §IX.C.1.ii.)

6. Claim 16: “The computer-readable medium as recited in claim 14 wherein said tracking data is generated by a tracking system.”

Pederson discloses claim 16 for the same or similar reasons discussed for claim limitation 17.b. (Ex. 1002 ¶123; *supra*, §IX.C.1.iii.)

7. Claim 24

i. [24.pre] “A computer-readable medium comprising computer-executable instructions stored therein for performing a method of monitoring an object, said method comprising:”

To the extent limiting, Pederson discloses the preamble of claim 24 for the same or similar reasons discussed for claim elements 14.pre and 17.pre.

(Ex. 1002 ¶124; *supra*, §§IX.C.1.i, IX.C.4.i.)

- ii. **[24.a] “generating identification data associated with each monitored object located at an identification gateway of a monitored environment, wherein said generating identification data is performed by an identification system;”**

Pederson discloses this limitation for the same or similar reasons discussed for claim limitation 17.a. (Ex. 1002 ¶125; *supra*, §IX.C.1.ii.)

- iii. **[24.b] “generating tracking data associated with each monitored object located within said monitored environment, wherein said generating tracking data is performed by a tracking system;”**

Pederson discloses this limitation for the same or similar reasons discussed for claim limitation 17.b. (Ex. 1002 ¶126; *supra*, §IX.C.1.iii.)

- iv. **[24.c] “merging and storing said identification data and said tracking data of each monitored object to form monitoring data for each monitored object; and”**

Pederson discloses this limitation for the same or similar reasons discussed for claim limitation 17.c. (Ex. 1002 ¶127; *supra*, §IX.C.1.iv.)

- v. **[24.d] “comparing new content of said monitoring data of a monitored object with prior content of said monitoring data of said monitored object.”**

Pederson discloses this limitation for the same or similar reasons discussed for claim limitation 17.d. (Ex. 1002 ¶181; *supra*, §IX.C.1.v.)

8. **Claim 25: “The computer-readable medium as recited in claim 24 wherein said method further comprises: processing said monitoring data.”**

Pederson discloses this limitation for the same or similar reasons discussed for claim 18. (Ex. 1002 ¶129; *supra*, §IX.C.2.)

9. **Claim 26: “The computer-readable medium as recited in claim 25 wherein said processing further includes: generating a message based on a result of said comparison of said new and said prior content.”**

Pederson discloses this limitation for the same or similar reasons discussed for claim 19. (Ex. 1002 ¶130; *supra*, §IX.C.3.)

D. Ground 4: Pederson and Johnson Render Obvious Claims 14-19 and 24-26

1. Claim 17

Pederson discloses all limitations of claim 17 as discussed above, including merging and storing the identification data and tracking data for each vehicle 70 and individual 56 and storing those within vehicle/individual specific files. (*Supra*, §IX.C.1.iv.) Pederson’s disclosure is consistent with the ’509 patent, which explains that “merging” is simply assigning or linking the identification data to the tracking data as opposed to using a tracking identifier that is unrelated to the monitored object’s identity. (*See id.*; Ex. 1001, 4:52-64.) Although Pederson discloses claim 17, to the extent Patent Owner argues, or the Board finds, that Pederson does not disclose **“merging and storing said identification data and said tracking data of each monitored object to form monitoring data for each**

monitored object” (limitation 17.c) Johnson discloses or suggests that feature, and it would have been obvious in view of Johnson to configure Pederson to form monitoring data for each monitored object as claimed. (Ex. 1002 ¶¶131-135.)

Johnson relates to monitoring identification and location information and is therefore in the same or a similar field to Pederson and the ’509 patent. (*Id.* ¶132.) Johnson’s disclosures are detailed above in Ground 2. (*Supra*, §IX.B.1.)

A POSITA implementing Pederson’s systems and methods would have had good reason to consider Johnson’s data structure. (Ex. 1002 ¶133.) For instance, such a person would have recognized that merging and storing together the identification data and tracking data for a monitored object would ensure that the tracking data was associated with a known identified object. (*Id.*) That would allow the tracking data for the object to be updated over time, which would be less reliable for objects that had a random identifier assigned. (*Id.*) For example, if a monitored object is identified, and that identification data is merged with the tracking data for the object as Johnson discloses, such merging would readily permit the system to determine if a future (or past) monitored object was the same object by comparing the identification data. (*Id.*) Having that common identification data merged and stored with the tracking data would allow a single record of the object’s tracking information to be maintained even if the object is intermittently seen (as opposed to continuously tracked) because each time it

appears and is identified its prior tracking data could be retrieved and updated based on the static identification data. (*Id.*)

A POSITA also would have understood that merging the identification data and tracking data simplifies data management and increases system efficiency. (*Id.* ¶134.) For example, such merging (as disclosed by Johnson) would likely reduce the number of database lookups required because there is no need to join separate tables (e.g., one with identification data and one with tracking data), which would have the benefits of reducing memory needs, improving query speeds, and reducing communication payloads. (*Id.*) Combining identification data with tracking data would also allow for immediate attribution of tracking data to a known identified object without any further steps or database lookups required because that data is merged and stored together. (*Id.*)

Given that Johnson discloses such merged identification data and tracking data, this would have been a predictable optimization using a known data structure. (*Id.* ¶135.) As such, Johnson provides a known solution for storing identification data and tracking data (i.e., merged into a single record), and a POSITA would have been motivated to implement that data structure in Pederson's system for the reasons discussed above. (*Id.*) A POSITA would have had a reasonable expectation of success because, for example, adopting a merged data structure like that disclosed by Johnson would not require a wholesale redesign of Pederson's

system given that Pederson already obtains, associates, and uses identification data and tracking data for each monitored object, including creating vehicle 70/individual 56 specific files. (*Id.*; *supra*, §IX.C.1.iv.) Such modifications would have been well within a POSITA's skills and abilities because they are merely applying known data structures and storage methodologies to known systems and would have yielded predictable results. Accordingly, it would have been obvious to implement a merged data structure like Johnson discloses in Pederson. (Ex. 1002 ¶135.) Pederson discloses or suggests the remaining limitations of claim 17 for the same or similar reasons as discussed above in Ground 3. (*Supra*, §IX.C.1.)

2. Claim 14

Pederson discloses all limitations of claim 14 as discussed above, including merging and storing person/vehicle-specific identification information (“**identification data**”) and the tracking data for persons/vehicles within a security zone 50 after they enter through a gate or checkpoint (“**tracking data**”) for each such person/vehicle (“**monitored object**”). (*Supra*, §IX.C.4.) Those disclosures are consistent with the '509 patent. (*See, e.g., supra*, §§IX.C.1.iv, IX.C.4, IX.D.1.) Although Pederson discloses claim 14, to the extent Patent Owner argues, or the Board finds, that Pederson does not disclose one or more of the limitations regarding merging identification data and tracking data in monitoring data groups,

Johnson discloses or suggests those features, and it would have been obvious in view of Johnson to configure Pederson to implement the claimed data structure. (Ex. 1002 ¶¶136-137; *see supra*, §IX.D.1.) Thus, Pederson in view of Johnson discloses and/or suggests, and renders obvious, claim 14. (Ex. 1002 ¶136.)

For example, as discussed above for claim 17, it would have been obvious in view Johnson of to implement a data structure in Pederson where the identification data for each monitored object is merged with the tracking data for that monitored object, and stored in a data record together such that each object has its own data record containing its merged identification and tracking data. (*Supra*, §IX.D.1.) Each such record would correspond to a “**monitoring data group**” (limitation 14.a), which, for the same or similar reasons as explained for claim 17 (*supra*, §IX.D.1) includes “**identification data associated with a monitored object**” (limitation 14.b) and “**tracking data associated with said monitored object**” (limitation 14.c) that is “**merged data**” (limitation 14.d) stored together in the same record. (Ex. 1002 ¶137; *see also supra*, §IX.C.4 (showing how Pederson discloses claim 14).) Accordingly, for the same or similar reasons as discussed for claim 17, the Pederson-Johnson combination renders obvious claim 14. (*See supra*, §IX.D.1, IX.D.4; Ex. 1002 ¶137.)

3. Claim 24

As discussed above in Ground 3, Pederson discloses claim 24. (*Supra*, §IX.C.7.) But to the extent Pederson does not explicitly disclose claim 24, Pederson in view of Johnson discloses and/or suggests, and renders obvious, claim 24. (Ex. 1002 ¶138.) As discussed in Ground 3, the analysis for claims 14 and 17 apply to the limitations of claim 24. (*Supra*, §IX.C.7 (demonstrating how Pederson discloses claim 24 with reference to the analysis for claims 14 and 17).) Accordingly, for the same or similar reason discussed in Ground 3 and for claims 14 and 17 in Ground 4, the Pederson-Johnson combination renders obvious claim 24. (*Supra*, §§IX.C.7, IX.D.1-2.)

4. Claims 15, 16, 18, 19, 25, 26

Pederson discloses or suggests and renders obvious the limitations of claims 15, 16, 18, 19, 25, and 26 for the same or similar reasons discussed in Ground 3. (Ex. 1002 ¶139; *supra*, §§IX.C.2-3, 5-6, 8-9.) These are dependent claims that each depend (directly or indirectly) from one of independent claims 14, 17, and 26 discussed above. The combination of Pederson and Johnson discussed above for those independent claims does not change how Pederson discloses the limitations of these dependent claims. (Ex. 1002 ¶139.) Accordingly, the Pederson-Johnson combination renders obvious claims 15, 16, 18, 19, 25, and 26. (*Id.*)

E. Ground 5: Pederson and Maruya Render Obvious Claims 20, 21, 27, and 28

- 1. Claim 20: “The method as recited in claim 18 wherein if said tracking system loses track of a first monitored object within said monitored environment, said processing includes: determining whether a second monitored object represents said first monitored object lost by said tracking system.”**

Pederson and Maruya render obvious claim 20. (Ex. 1002 ¶¶140-143.)

Pederson discloses tracking a person or vehicle within one or more zones 50 using a plurality of cameras 12. (*See supra*, §IX.C.1.) But as a tracked person or vehicle moves within or between zones 50, Pederson does not expressly disclose how or if cameras 12 can resume tracking of a monitored person or vehicle if the system loses track of that object. (Ex. 1002 ¶140; *see generally* Ex. 1005.)

Maruya discloses a surveillance system comprising a plurality of cameras configured to track a target object in a space having blind spots. (Ex. 1007, 2:41-46.) For example, Maruya’s surveillance system extracts information about the features of a tracked object or person (a “target”) that are used to identify the target and stores them in information comparing means 13. (*Id.*, 3:59-4:39; *see also id.*, 7:19-28.) Then that system compares the images from a camera to the extracted features (using comparing means 13) to determine if the target is present within the camera view. (*Id.*, 5:14-6:13.) When the target is not detected on the tracking camera, it assumes the target has disappeared from view. (*Id.*, 6:29-34; *see also*

id., 7:29-59.) In response to the target disappearing from view, Maruya transmits the feature information to other cameras, and when any camera detects the target by matching it to the stored features (i.e., by identifying the target), thereby determining the newly acquired target is the same one previously identified, that camera starts transmitting video of the target. (*Id.*, 6:35-67; *see also id.*, 7:60-8:3.) In this way, if Maruya’s surveillance system loses track of the target (“**monitored object**”), the system including its comparing means 13 is capable of determining whether a moving object on a second camera (“**a second monitored object**”) is the same object as the target (“**said processing includes: determining whether a second monitored object represents said first monitored object lost by said tracking system**”) by identifying that same monitored object on another camera (or the original camera once it is re-acquired) within the monitored environment and then comparing the feature information for the identified target. (Ex. 1002 ¶141.)

A POSITA considering Pederson’s disclosures would have understood that in real world applications, cameras 12 in Pederson’s zones 50 would not always be able to provide complete coverage throughout a monitored environment. (*Id.* ¶142.) For example, a tracked person or object could pass through a blind spot between cameras, or behind another person or object where they are not visible to any camera. (*Id.*; *see* Ex. 1007, 1:48-58 (“Even when a plurality of cameras are

used... information about position and motion of the movable object is lost when a blind spot is present, thus preventing further tracking.”).) In such circumstances, it would have been desirable to resume tracking the person or vehicle after they became visible to or recognized by one of the cameras again. (Ex. 1002 ¶142.) Otherwise, if Pederson’s system could not resume tracking for a person or vehicle if it was even momentarily lost, Pederson’s system would be unreliable and easy for malicious actors to avoid or subvert, undermining its value as a security tool. (*Id.*) Accordingly, a POSITA would have looked to Maruya, which is in the same or a similar field to Pederson and the ’509 patent, as all relate to security and tracking systems. Having looked to Maruya, such a person would have been motivated and found it obvious to implement functionality in Pederson’s apparatus so that if one of its tracking system cameras loses track of the person or vehicle being monitored within a zone 50, then Pederson’s computer 22 would be configured to enable the apparatus to determine whether a person or object appearing on the feed from a different camera was the same as the first person or object previously tracked and lost by the first camera as taught by Maruya.

Pederson’s computer 22 already processes and analyzes monitoring data, including comparing new monitoring data to old monitoring data. (*See, e.g., supra*, §IX.C.1.v.) Thus, a POSITA would have understood that computer 22 could have been used to implement the functionality taught by Maruya and

discussed above in Pederson's system. (Ex. 1002 ¶143.) Computer 22 already handles all information processing in Pederson's system so it would have been obvious to implement any new functionality on that same computer. (*Id.*) The combination would have yielded the known improvement of enabling the system to resume tracking of an object that was previously lost. (*Id.*) A POSITA would have had a reasonable expectation of success at least because the combination is simply the result of implementing a known function in a known system using generic known hardware (a computer and cameras as disclosed by Pederson and Maruya). (*Id.*)

2. **Claim 21: "The method as recited in claim 20 wherein said determining is performed in response to said identification system identifying said first monitored object after said tracking system lost track of said first monitored object, and wherein said processing further includes modifying said monitoring data based on said determining step."**

Pederson and Maruya render obvious claim 21. (Ex. 1002 ¶144.) As explained above for claim 20, the Pederson-Maruya system identifies an object, and then determines if that object matches the stored features for the monitored or tracked object. (*Supra*, §IX.C.1; *see also, e.g.*, Ex. 1007, 3:59-65.) Thus, it identifies the new object as being the same object as the previously monitored object using the object-specific features. (*See id.*; Ex. 1002 ¶144.) Pederson discloses that entry point or security checkpoint 52 can identify vehicles and individuals as they both enter and exit a secured zone 50. (Ex. 1005, 9:18-32.)

Thus, when a camera within a zone 50 loses track of a monitored individual or vehicle, that person or vehicle that had previously entered a zone 50 would at least be identified as they left zone 50 using the same “**identification system**” discussed above. (Ex. 1002 ¶144; *supra*, §IX.C.1.ii.) Thus, the context of the Pederson-Maruya method discussed for claim 20, Pederson’s “**identification system**” camera 12 at checkpoint 52 is one camera that could perform the identification of a lost object (e.g., as it attempts to exit the monitored area) (“**said identification system identifying said first monitored object after said tracking system lost track of said first monitored object**”). (Ex. 1002 ¶144.) And a POSITA would have understood that Pederson’s computer 22 modifies the monitoring data based on that identification, at least because Pederson discloses that such identification information from “input devices 12, 18 ... [is] stored by the intelligent video/audio observation and identification database system 10.” (Ex. 1005, 9:26-32; *see also supra* §IX.C.1.ii (computer 22 receiving identification data from identification system).)

3. **Claim 27: “The computer-readable medium as recited in claim 25 wherein if said tracking system loses track of a first monitored object within said monitored environment, said processing includes: determining whether a second monitored object represents said first monitored object lost by said tracking system.”**

Pederson and Maruya render obvious claim 27 for the same or similar reasons as discussed above for claim 20. (Ex. 1002 ¶145; *supra*, §IX.E.1.)

4. **Claim 28: “The computer-readable medium as recited in claim 27 wherein said determining is performed in response to said identification system identifying said first monitored object after said tracking system lost track of said first monitored object, and wherein said processing further includes modifying said monitoring data based on said determining step.”**

Pederson and Maruya render obvious claim 10 for the same or similar reasons as discussed above for claim 21. (Ex. 1002 ¶146; *supra*, §IX.E.2.)

F. Ground 6: Pederson, Maruya, and Johnson Render Obvious Claims 20, 21, 27, and 28

As discussed above in Section IX.E, Pederson and Maruya discloses and/or suggests and renders obvious claims 20, 21, 27, and 28. Those claims indirectly depend on either claim 17 or claim 24. For the reasons discussed above in Section IX.D, to the extent Pederson does not disclose one or more limitations of independent claims 17 or 24, those independent claims would have been obvious in view of Pederson and Johnson. (*Supra*, §§IX.D.2-3.) A POSITA would have combined Johnson with the Pederson-Maruya combination for the same or similar reasons as discussed above. (*Id.*; Ex. 1002 ¶147.) The addition of Maruya to the combination does not change that analysis because Maruya relates to identifying and tracking objects that are occasionally occluded from the view of one or more cameras, which is not pertinent to the format of the data structure disclosed by Johnson and that a POSITA would have been motivated to implement in Pederson in view of Johnson. (*Id.*) Therefore, the Pederson-Maruya-Johnson combination

renders these claims obvious for reasons similar to those discussed in Section IX.E.

(*Id.*)

X. CONCLUSION

Petitioners request institution of IPR for claims 14-21, and 25-28 of the '509 patent based on the grounds specified in this petition.

Respectfully submitted,

Dated: February 17, 2026

By: / Naveen Modi/
Naveen Modi (Reg. No. 46,224)

CERTIFICATE OF COMPLIANCE

Pursuant to 37 C.F.R. §42.24(d), the undersigned certifies that the foregoing
Petition for *Inter Partes* Review of U.S. Patent No. 7,057,509 contains, as
measured by the word-processing system used to prepare this paper, 13,681 words.
This word count does not include the items excluded by 37 C.F.R. §42.24 as not
counting towards the word limit.

Respectfully submitted,

Dated: February 17, 2026

By: / Naveen Modi/
Naveen Modi (Reg. No. 46,224)

CERTIFICATE OF SERVICE

I hereby certify that on February 17, 2026, I caused a true and correct copy of the foregoing Petition for *Inter Partes* Review of U.S. Patent No. 7,057,509 and supporting exhibits to be served via express mail on the Patent Owner at the following correspondence address of record as listed on Patent Center:

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By: /Naveen Modi/
Naveen Modi (Reg. No. 46,224)