

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

NATIONAL RAILROAD PASSENGER CORPORATION D/B/A AMTRAK
Petitioner

v.

RAILWARE, INC.
Patent Owner

U.S. Patent RE49115
Issue Date: June 28, 2022
Title: TOOLS FOR RAILWAY TRAFFIC CONTROL

Inter Partes Review No. IPR2023-01181

**PETITION FOR *INTER PARTES* REVIEW OF U.S. PATENT NO. RE49115
CHALLENGING CLAIMS 20-36
UNDER 35 U.S.C. §§ 311-319 AND 37 C.F.R. § 42.1 *et seq.***

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PETITIONER’S EXHIBIT LIST

Table of Exhibits for U.S. Patent RE49115 Petition for *Inter Partes* Review

Exhibit Number	Description
1001	U.S. Patent RE49115 (the “’115 Patent”)
1002	File History of U.S. Patent RE49115
1003	Declaration of Dr. William Michalson including Curriculum Vitae (“Michalson”)
1004	Oriol, N., Sheridan, T. and Multer, J. (2004). <i>Supporting Railroad Roadway Worker Communications with a Wireless Handheld Computer: Volume 1: Usability for the Roadway Worker</i> . Report No. DOT/FRA/ORD-04/13.i. U.S. Department of Transportation, Federal Railroad Administration (“Oriol”)
1005	Masquelier, T., Sheridan, T., and Multer, J. (2004). <i>Supporting Railroad Roadway Worker Communications with a Wireless Handheld Computer: Volume 2: Impact on Dispatcher Performance</i> . Report No. DOT/FRA/ORD-04/13.ii. U.S. Department of Transportation, Federal Railroad Administration (“Masquelier”)
1006	WO International Publication No. 2004/042663 to Wise (“Wise”)
1007	U.S. Patent Application Pub. No. 2012/0176217 to Tamaribuchi et al. (“Tamaribuchi”)
1008	<RESERVED>
1009	<RESERVED>
1010	<RESERVED>
1011	<i>Railware, Inc. v. National Railroad Passenger Corporation d/b/a/ Amtrak</i> , 1:22-cv-5013-KPF, Amended Complaint, Dkt. No. 27 (Jun. 30, 2022 S.D.N.Y.) (without exhibits)
1012	<i>Railware, Inc. v. National Railroad Passenger Corporation d/b/a/ Amtrak</i> , 1:22-cv-5013-KPF, Waiver of the Service of Summons, Dkt. No. 17 (Jul. 11, 2022 S.D.N.Y.).

1013	Federal Railroad Administration, Research Reports, available at https://web.archive.org/web/20050211025837/http://www.fra.dot.gov:80/us/content/412
1014	Federal Railroad Administration, Research Reports, available at https://web.archive.org/web/20060922194521/http://www.fra.dot.gov:80/us/content/412
1015	Federal Railroad Administration, Research Reports, available at https://web.archive.org/web/20080212192107/http://www.fra.dot.gov:80/us/content/412
1016	Federal Railroad Administration, Research Reports, available at https://web.archive.org/web/20090320043352/http://www.fra.dot.gov:80/us/content/412
1017	GB2366419 to Nagai et al.
1018	WO International Publication No. 2005/047074 to Makkinga (“Makkinga”)
1019	U.S. Patent No. 6,959,233 to Hungate et al. (“Hungate”)
1020	U.S. Patent No. 7,328,090 to Pachl (“Pachl”)
1021	U.S. Patent No. 8,406,943 to Brand et al. (“Brand”)
1022	Internet Archive Affidavit for URLs including EX1013-1016: https://web.archive.org/web/20050211025837/http://www.fra.dot.gov:80/us/content/412 https://web.archive.org/web/20060922194521/http://www.fra.dot.gov:80/us/content/412 https://web.archive.org/web/20080212192107/http://www.fra.dot.gov:80/us/content/412 https://web.archive.org/web/20090320043352/http://www.fra.dot.gov:80/us/content/412
1023	Excerpt of File History from U.S. Pat. RE49115
1024	File History of U.S. Patent No. 9,403,545
1025	U.S. Patent No. 9,403,545
1026	Malsch, N., Sheridan, T. and Multer, J. (2004). <i>Impact of Data Link Technology on Railroad Dispatcher Operations</i> . Report No. DOT/FRA/ORD-04/11. U.S. Department of Transportation, Federal Railroad Administration (“Malsch”)

TABLE A: LISTING OF CLAIMS

“Matter enclosed in heavy brackets [] appears in the original patent but forms no part of this reissue specification” and “italics indicates the additions made by reissue” EX1001, 1:4-9

Claim Designation	Claim Language
Claim 1	
[1[Pre]	A centralized railway control system comprising:
1[A]	a rail personnel contact database registering, for each railway personnel, an electronic contact address of the railway personnel; and
1[B]	a railway traffic control apparatus for controlling access to railway tracks, said railway traffic control apparatus comprising a processor, a non-transitory medium storing one or more programs of executable instructions, and a network interface through which the railway traffic control apparatus communicates via a network with a user terminal,
1[C]	wherein execution of said one or more programs of executable instructions configures the processor to include: a block placing part to place a block on one or more specified track sections to permit a railway field worker to enter the track sections while blocking railway traffic to said track sections;
1[D]	a code generation part to generate a removal code, retrieve the electronic contact address of the railway field worker from the rail personnel contact database, and transmit the removal code to the electronic contact address of the railway field worker; and
1[E]	a block removal part to remove only upon entry of the removal code, the block placed by the block placing part on said one or more track sections.]
[Claim 2	
[2]	The centralized railway control system of claim 1, wherein the railway traffic control apparatus further comprises: a RTC user interface to permit a user to specify said one or more track sections to be blocked, specify an instruction to the centralized railway control system to block the railway traffic to the specified track

	sections, and specify identifying information of the railway field worker to be performing work in the specified track sections.】
【Claim 3	
[3]	The centralized railway control system of claim 1, further comprising: a railway control database registering block identifying information, including block limits identifying the one or more blocked track sections, along with the removal code for removing the block of the track sections.】
【Claim 4	
[4]	The centralized railway control system of claim 1, further comprising: a railway control database registering (a) identification of the user who specified the instruction to block the track sections and (b) block identifying information, including block limits identifying the one or more blocked track sections, notes specifying reasons for the block, and date and time at which the block was placed.】
【Claim 5	
[5]	The centralized railway control system of claim 1, wherein upon placement by the block placing part of the block of railway traffic to said one or more specified track sections, the code generation part transmits the removal code to the electronic contact address of the railway field worker, and the block of railway traffic to said one or more specified track sections remains in place in the centralized railway control system until the entry of the removal code in the centralized railway control system to cause the block removal part to remove the block on said one or more track sections.】
【Claim 6	
6[Pre]	The centralized railway control system of claim 1, wherein the railway traffic control apparatus further comprises:
6[A]	a block removal user interface to permit a user to enter the removal code to cause the block removal part to remove the block on said one or more track sections,
6[B]	wherein the block of railway traffic to said one or more specified track sections remains in place in the centralized railway control system

	until the entry of the removal code through the block removal user interface.]
[Claim 7]	
7[Pre]	The centralized railway control system of claim 6, wherein the block removal user interface further requires, in addition to the entry of the removal code, the user to specify that confirmation that the track sections have been cleared has been obtained from the railway field worker associated with the block, before the block removal user interface permits the removal code to be transmitted to the block removal part, and
7[A]	the centralized railway control system further comprises a railway control database registering (a) block identifying information identifying the one or more blocked track sections, date and time at which the block was placed and identifying information the railway field worker associated with the block, and (b) block removal information identifying date and time at which the block was removed and identifying the user who entered the removal code and specified that confirmation that the track sections have been cleared was obtained from the railway field worker associated with the block.]
[Claim 8]	
[8]	The centralized railway control system of claim 1, further comprising: a voice processing part configured to receive a voice message and extract the removal code from the voice message.]
[Claim 9]	
[9]	The centralized railway control system of claim 1, wherein the code generation part transmits an electronic message to the electronic contact address of the railway field worker, and the electronic message transmitted to the electronic contact address of the railway field worker includes the removal code and includes an embedded link for activating a return transmission of the removal code to the block removal part of the centralized railway control system.]
[Claim 10]	
10[Pre]	A railway traffic control apparatus for controlling access to railway tracks, said railway traffic control apparatus comprising:

10[A]	a block placing part to place a block on one or more selected track sections to permit a railway field worker to enter the track sections while blocking railway traffic to said track sections;
10[B]	a code generation part to generate a removal code, determine an electronic contact address of the railway field worker by accessing a rail personnel contact database registering, for each railway personnel, electronic contact information of the railway personnel, and transmit the removal code to the electronic contact address of the railway field worker; and
10[C]	a block removal part to remove only upon entry of the removal code, the block placed by the block placing part on said one or more track sections for the railway field worker.]
[Claim 11]	
[11]	The railway traffic control apparatus of claim 10, further comprising: a RTC user interface to permit a user to specify said one or more track sections to be blocked, specify an instruction to the centralized railway control system to block the railway traffic to the specified track sections, and specify identifying information of the railway field worker to be performing work in the specified track sections.]
[Claim 12]	
[12]	The railway traffic control apparatus of claim 10, wherein block identifying information, including block limits identifying the one or more blocked track sections, is registered in a railway control database, along with the removal code for removing the block of the track sections.]
[Claim 13]	
[13]	The railway traffic control apparatus of claim 10, wherein block identifying information, including block limits identifying the one or more blocked track sections, notes specifying reasons for the block, and date and time at which the block was placed, are registered in a railway control database, along with identification of the user who specified the instruction to block the track sections.]
[Claim 14]	

[14]	The railway traffic control apparatus of claim 10, wherein upon placement by the block placing part of the block of railway traffic to said one or more specified track sections, the code generation code transmits the removal code to the electronic contact address of the railway field worker, and the block of railway traffic to said one or more specified track sections remains in place in the centralized railway control system until the entry of the removal code in the centralized railway control system to cause the block removal part to remove the block on said one or more track sections.]
[Claim 15]	
[15]	The railway traffic control apparatus of claim 10, further comprising: a block removal user interface to permit a user to enter the removal code to cause the block removal part to remove the block on said one or more track sections, wherein the block of railway traffic to said one or more specified track sections remains in place in the centralized railway control system until the entry of the removal code through the block removal user interface.]
[Claim 16]	
16[Pre]	The railway traffic control apparatus of claim 15, wherein the block removal user interface further requires, in addition to the entry of the removal code, the user to specify that confirmation that the track sections have been cleared has been obtained from the railway field worker associated with the block, before the block removal user interface permits the removal code to be transmitted to the block removal part, and
16[A]	block identifying information identifying the one or more blocked track sections, date and time at which the block was placed and identifying information the railway field worker associated with the block is registered in a railway control database, along with block removal information identifying date and time at which the block was removed and identifying the user who entered the removal code and specified that confirmation that the track sections have been cleared was obtained from the railway field worker associated with the block.]

[Claim 17]	
[17]	The railway traffic control apparatus of claim 10, further comprising: a voice processing part configured to receive a voice message and extract the removal code from the voice message.]
[Claim 18]	
[18]	The railway traffic control apparatus of claim 10, wherein the code generation part transmits an electronic message to the electronic contact address of the railway field worker, and the electronic message transmitted to the electronic contact address of the railway field worker includes the removal code and includes an embedded link for activating a return transmission of the removal code to the block removal part of the centralized railway control system.]
[Claim 19]	
19[Pre]	A method for a centralized railway control system to control access to railway tracks, the method comprising:
19[A]	providing a user interface on a user terminal including a block placing part to place a block on one or more specified track sections to permit a railway field worker to enter the track sections while blocking railway traffic to said track sections;
19[B]	generating a removal code, determining an electronic contact address of the railway field worker by accessing a rail personnel contact database registering, for each railway personnel, electronic contact information of the railway personnel, and transmitting the removal code to the electronic contact address of the railway field worker; and
19[C]	permitting the block to said one or more track sections to be removed only upon entry of the removal code in the centralized railway control system.]
Claim 20	
20[Pre]	<i>A railway control apparatus for centralized control of a centrally controllable railway network including plural railways and a plurality of railway interlocks dispersed in said plural railways, comprising:</i>
20[A]	<i>a processor for controlling a plurality of track sections in the railway network, wherein each track section is associated with a corresponding interlock and is disposed in any of said plural railways of said railway network that is managed by centralized control</i>

	<i>operation from the railway control apparatus, the processor controlling, by said centralized control operation, one or more interlocks amongst the plurality of railway interlocks dispersed in said plural railways of said railway network, to block railway traffic to one or more specified track sections; and</i>
20[B]	<i>a memory device storing computer-executable instructions, wherein execution of the computer-executable instructions by the processor causes the railway control apparatus to:</i> <i>receive a selection of at least one track section amongst the plurality of track sections;</i>
20[C]	<i>transmit a block signal to the corresponding interlock associated with the at least one selected track section, to place a block on the selected track section by said centralized control operation from the railway control apparatus;</i>
20[D]	<i>generate a secret code associated with the at least one selected track section; and</i>
20[E]	<i>transmit the secret code to a remote user terminal.</i>
Claim 21	
[21]	<i>The railway control apparatus of claim 20, wherein execution of the computer-executable instructions by the processor causes the railway control apparatus to store the secret code in the memory device.</i>
Claim 22	
22[Pre]	<i>The railway control apparatus of claim 21, wherein execution of the computer-executable instructions by the processor causes the railway control apparatus to:</i>
22[A]	<i>receive a second secret code;</i>
22[B]	<i>determine that the second secret code and the secret code stored in the memory device are the same; and</i>
22[C]	<i>responsive to determining that the second secret code and the secret code stored in the memory device are the same, release the block on the at least one selected track section.</i>
Claim 23	
23[Pre]	<i>The railway control apparatus of claim 21, wherein execution of the computer-executable instructions by the processor causes the railway control apparatus to:</i>
23[A]	<i>receive a second secret code;</i>

23[B]	<i>determine that the second secret code and the secret code stored in the memory device are not the same; and</i>
23[C]	<i>responsive to determining that the second secret code and the secret code stored in the memory device are not the same, maintaining the block on the at least one selected track section.</i>
Claim 24	
[24]	<i>The railway control apparatus of claim 20, wherein the secret code is transmitted to the remote user terminal by messaging or email.</i>
Claim 25	
[25]	<i>The railway control apparatus of claim 20, wherein the remote user terminal is a mobile phone, a smartphone, a tablet computer, a pager, or a personal digital assistant, and execution of the computer-executable instructions by the processor causes the railway control apparatus to transmit the secret code to said mobile phone, smartphone, tablet computer, pager, or personal digital assistant.</i>
Claim 26	
[26]	<i>The railway control apparatus of claim 20, further comprising: a network interface, wherein execution of the computer-executable instructions by the processor causes the railway control apparatus to transmit the secret code to the remote user terminal via the network interface.</i>
Claim 27	
[27]	<i>The railway control apparatus of claim 20, wherein only the railway control apparatus and the remote user terminal receive the secret code.</i>
Claim 28	
[28]	<i>The railway control apparatus of claim 20, wherein the secret code is generated by a random process.</i>
Claim 29	
29[Pre]	<i>The railway control apparatus of claim 20, further comprising:</i>
29[A]	<i>a rail personnel database comprising information related to a plurality of rail personnel;</i>
29[B]	<i>wherein execution of the computer-executable instructions by the processor causes the railway control apparatus to: retrieve specific personnel data from the rail personnel database; and</i>

29[C]	<i>determine an electronic address of the remote user terminal to which the secret code is to be transmitted.</i>
Claim 30	
30[Pre]	<i>A railway control apparatus comprising:</i>
30[A]	<i>a processor for controlling a plurality of track sections in a railway network, wherein each track section is associated with a corresponding interlock; and</i>
30[B]	<i>a memory device storing computer-executable instructions, wherein execution of the computer-executable instructions by the processor causes the railway control apparatus to:</i> <i>receive a selection of at least one track section amongst the plurality of track sections;</i>
30[C]	<i>responsive to receiving the selection of the at least one track section, determine that the at least one selected track section has an existing block;</i>
30[D]	<i>receive a signal from the corresponding interlock of the at least one selected track section that a new block can be established;</i>
30[E]	<i>responsive to receiving the signal that a new block can be established, transmit a block signal to the corresponding interlock associated with the at least one selected track section, to place a block on the at least one selected track section;</i>
30[F]	<i>generate a secret code associated with the at least one selected track section; and</i>
30[G]	<i>transmit the secret code to a remote user terminal.</i>
Claim 31	
31[Pre]	<i>A method comprising:</i>
31[A]	<i>receiving, by a processor, a selection of at least one selected track section in a centrally controlled railway network, wherein each track section corresponds to an interlock;</i>
31[B]	<i>responsive to receiving the selection of the at least one selected track section, determining, by the processor, that the at least one selected track section has an existing block;</i>
31[C]	<i>receiving, by the processor, a signal from the corresponding interlock of the at least one selected track section that a new block can be established;</i>
31[D]	<i>responsive to receiving the signal that a new block can be established, transmitting, by the processor, a block signal to the corresponding</i>

	<i>interlock of the selected at least one selected track section to place a block on the selected at least one selected track section;</i>
31[E]	<i>generating, by the processor, a secret code associated with the selected at least one selected track section;</i>
31[F]	<i>transmitting, by the processor, the secret code to a remote user terminal.</i>
Claim 32	
[32]	<i>The method of claim 31, further comprising: storing the secret code in a memory device.</i>
Claim 33	
33[Pre]	<i>The method of claim 32, further comprising:</i>
33[A]	<i>receiving, by the processor, a second secret code;</i>
33[B]	<i>determining, by the processor, that the second secret code and the secret code stored in the memory device are the same; and</i>
33[C]	<i>responsive to determining that the second secret code and the secret code stored in the memory device are the same, releasing, by the processor, the block on the selected at least one selected track section.</i>
Claim 34	
34[Pre]	<i>The method of claim 32, further comprising:</i>
34[A]	<i>receiving, by the processor, a second secret code;</i>
34[B]	<i>determining, by the processor, that the second secret code and the secret code stored in the memory device are not the same; and</i>
34[C]	<i>responsive to determining that the second secret code and the secret code stored in the memory device are not the same, maintaining the block on the selected at least one selected track section.</i>
Claim 35	
[35]	<i>The method of claim 31, wherein only the processor and the remote user terminal receive the secret code.</i>
Claim 36	
36[Pre]	<i>The method of claim 31, further comprising:</i>
36[A]	<i>retrieving, by the processor, specific personnel data from a rail personnel database; and</i>
36[B]	<i>determining, by the processor, an electronic address of the remote user terminal to which the secret code is to be transmitted.</i>

I. INTRODUCTION

National Railroad Passenger Corporation d/b/a Amtrak (“Petitioner”) petitions under 35 U.S.C. § 312 and 37 C.F.R. § 42 for *inter partes* review of claims 20-36 (“Challenged Claims”) of U.S. Patent No. RE49115 (“RE’115 Patent”) (EX1001). The RE’115 Patent is purportedly assigned to Railware, Inc. (“Railware”).¹

The patent relates to generating and communicating a code over a network for railway control. EX1001, Title, Abstract, Fig. 4, 2:66-3:3, 4:45-49, 8:6-14; EX1011, ¶ 15. The RE’115 Patent relies on generic components of centralized railway control (computer), network, and mobile device, to transmit signals for blocking and unblocking railway tracks. EX1001, Figs. 3A-B, 1:39-2:17, 6:20-27, 6:34-7:30, 9:25-27; EX1011, ¶¶ 2, 14; EX1023, 2, 8 (¶¶ 5, 7), 15-16.

The Grounds advanced here were not relied upon during prosecution of the RE’115 Patent and teach such a centralized railway control system to generate a code and transmit signals to block and unblock tracks.

¹ Petitioner reserves the right to challenge in litigation Railware’s standing to assert the RE’115 Patent and any related patents.

II. MANDATORY NOTICES

A. Real Party-in-Interest – §42.8(b)(1)

Pursuant to 37 C.F.R. § 42.8(b)(1), the Petitioner is the real party-in-interest. Further, the Petitioner certifies that no other party exercised control or could exercise control over the filing of this petition or Petitioner's participation in any proceeding instituted on this petition.

B. Related Proceedings – §42.8(b)(2)

The RE'115 Patent, U.S. Pat. RE47835 (the "RE'835 Patent"), and U.S. Patent No. 9,517,782 ("782 Patent") are asserted in *Railware, Inc. v. National Railroad Passenger Corporation d/b/a Amtrak*, 1:22-cv-05013-KPF (S.D.N.Y.) ("Litigation"). Amtrak filed an opposed motion to dismiss on patent ineligibility and other grounds (Dkt. Nos. 27-34), which is fully briefed and pending. No case schedule has been set.

C. Counsel – §42.8(b)(3) and (b)(4); Service Information; Fees

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A Power of Attorney is filed concurrently herewith under 37 C.F.R. § 42.10(b). The Office is authorized to charge the fee set forth in 37 C.F.R. § 42.15(a) and other fees to Deposit Account No. 22-0261.

III. CERTIFICATION OF GROUNDS FOR STANDING

The RE'115 Patent is available for IPR, and Petitioner is not barred or estopped from requesting IPR. 37 C.F.R. §42.104(a). The Amended Complaint (EX1011) was served by Patent Owner filing on July 11, 2022 the Waiver of the Service of Summons dated July 8, 2022. EX1012; *The Brinkmann Corporation v. A&J Manufacturing, LLC*, IPR2015-00056, Paper 10, at 6-7 (PTAB Mar. 23, 2015). Thus, this Petition is filed within one year after Amtrak was served with a complaint for alleged infringement. Amtrak has not filed a separate civil action challenging the validity of the claims of the RE'115 Patent, '782 Patent, and RE'835 Patent. This petition is one of three petitions that Petitioner has filed concurrently.

IV. UNPATENTABILITY GROUNDS

Petitioner requests cancellation of claims 20-36 based on the grounds below.

Ground	Reference(s)	Challenged Claims	Basis
1	Oriol and Masquelier	20-36	103
2	Oriol, Masquelier, and Wise	20-36	103
3	Oriol, Masquelier, and Pachl	20-36	103

The three grounds are supported by the Declaration of Dr. William Michalson (EX1003, “Michalson”) and other supporting evidence in the Exhibit List. Michalson, ¶¶19-22.

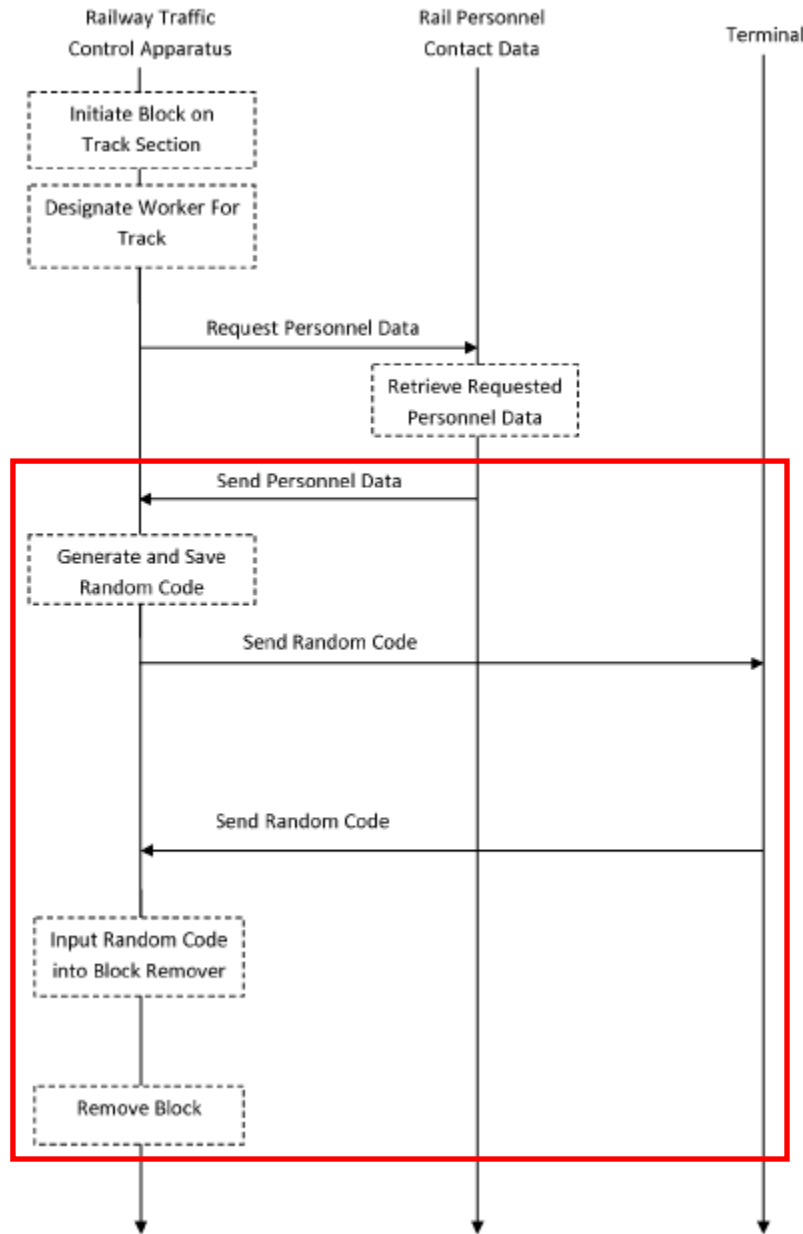
V. THE RE’115 PATENT

A. Summary

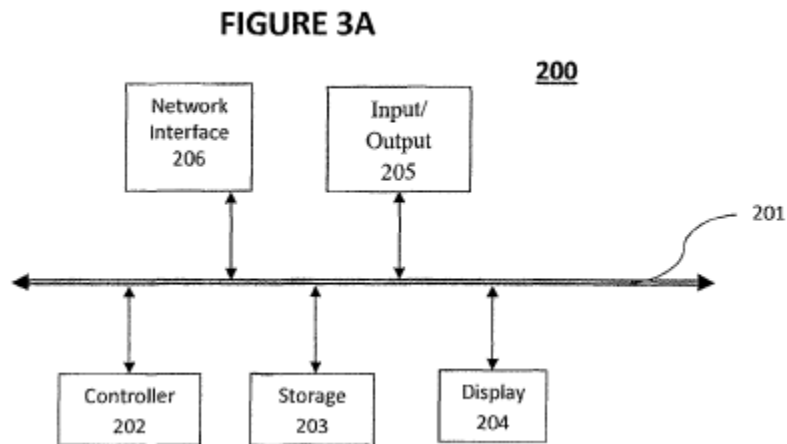
The RE’115 Patent (application no. 16/709,126) was filed on December 10, 2019 and issued on June 28, 2022. This is a reissue of U.S. Patent No. 9,403,545 (“’545 Patent”) (application no. 14/519,727) filed on October 21, 2014 and issued August 2, 2016, and continuation of application No. 15/928,955, filed on March 22, 2018, now RE’835 Patent (reissue of the ’545 Patent) issued on February 4, 2020, and provisional application no. 61/893,547 filed on October 21, 2013. EX1001, first two pages; EX1002 (generally).

The RE’115 Patent describes “Tools . . . to control traffic over a railway track section . . . [where] a block is placed . . . [and] a release code is generated . . . [such that] [t]he block is removed from the track section when the release code is received by the system.” EX1001, Abstract. This is shown in Figure 4 below.

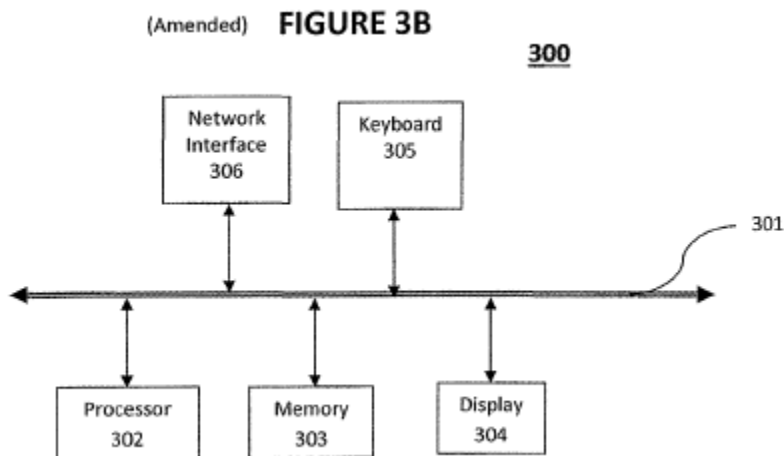
FIGURE 4



Id., Fig. 4 (annotated). RE'115 Patent admits it invokes generic hardware for this railway control, as shown in Figures 3A (user terminal) and 3B (railway control apparatus) below.



Id., Fig. 3A, 6:34-59, 9:25-27.



Id., Fig. 3B, 6:20-27, 6:60-7:30; Michalson, ¶¶43-45.

B. Prosecution History

On December 10, 2019, a reissue application was filed leading to the RE'115 Patent. After preliminary amendments filed on December 10, 2019 and May 7, 2020, claims 1-19 were cancelled and claims 20-39 were added. *Id.*

On May 26, 2021, a non-final office action was issued based on several grounds, such as certain claims were anticipated or rendered obvious over primary reference EP Publication No. 1308366 to Rahn et al. (“Rahn”) (Ground 6) and rendered obvious over Rahn and Tamaribuchi (Ground 7). *Id.*

On August 23, 2021, an examiner interview summary was filed, including “Applicant’s representative argued there would be no need for a person of ordinary skill in the art to write specific computer programming for the claimed receipt, extraction and transmission of a secret code via voice message; rather, one would cho[o]se from an available library of software.” *Id.*; EX1023, 2.

On October 9, 2021, Patent Owner filed terminal disclaimers and a §1.132 declaration (dated October 8, 2021) by the alleged inventor Ross Pirtle. EX1002; EX1023, 8 (¶ 7), 15-16.

In the same October 9, 2021 filing, Patent Owner also amended the specification and claims as well as traversing the rejection. EX1002.

On November 23, 2021, a final office action rejection issued with certain objections, but stated the objected to claims recite “allowable subject matter.” *Id.*

On February 9, 2022, Patent Owner cancelled certain claims (then claims 23, 24, and 36) while claims 20-22, 25-35 and 37-39 remained pending. *Id.*

On February 24, 2022, a notice of allowance was issued. *Id.*; Michalson, ¶¶48-56.

C. Priority Date

Petitioner assumes for the purpose of this Petition a priority date of October 21, 2013 (the “Priority Date”) but reserves the right to contest this priority date (and priority chain) before the PTAB and district court.

Because the RE’115 Patent issued from an application filed after enactment of the America Invents Act (“AIA”) on March 16, 2013, the post-AIA statutory framework applies but evaluating under pre- or post-AIA does not change the below analysis.

VI. LEVEL OF ORDINARY SKILL IN THE ART

Petitioner submits that a person having ordinary skill in the art (“POSITA”) as of the Priority Date would have had at least a bachelor’s degree in electrical, mechanical, or related engineering, and also would have had at least two (2) years of experience in railway operations or railway control systems and would have programming experience. Michalson, ¶24. A higher level of education or specific skill might make up for less experience, and vice-versa. *Id.* Petitioner’s expert, Michalson, has more than ordinary skill in the art. *Id.*, ¶25.

VII. CLAIM CONSTRUCTION

Petitioner is not aware of any “prior claim construction determination” related to the RE’115 Patent, ’782 Patent, and RE’835 Patent. 37 C.F.R. §42.100(b).

Because the prior art plainly discloses the claim limitations, the claims require no express construction and should be given their plain and ordinary meaning.

However, Petitioner reserves the right to raise claim construction arguments in any litigation concerning the '782 Patent, RE'115 Patent, and RE'835 Patent.

VIII. OVERVIEW OF THE PRIOR ART

A. State of the Art

RE'115 Patent admits it was well-known to use an interface in a centralized railway control system to control track blocking and unblocking by transmitting a signal, *e.g.*, blocking signal or unblocking signal, to track interlocks.

Interlocking signals govern movement within a sector controlled by an interlock.

...

Interlocking systems usually incorporate a 3-color system by which the train, or train conductor, is informed to proceed at regular speed, is informed to proceed at a reduced speed or **is prohibited from proceeding through the upcoming section.**

...

One method of **controlling all of the interlocks** within a rail system is through a **centralized traffic control (CTC)**, or traffic control system (TCS). A **CTC is used for monitoring, tracking and operating trains traversing tracks throughout a network.** The CTC is controlled by a single person known as a train dispatcher.

...

Information regarding track conditions, train traffic, scheduling, etc., **are presented on a control console which may include a map of the entire rail system controlled by the CTC.** Through the control

console, the dispatcher has control of each interlock signal (that is, the dispatcher controls the train traffic and flow of train traffic using the interlocks) and is constantly made aware of the positions of trains in the railway system as such positions are electronically reported by signals present throughout the railway system. In addition, in order to provide for safe traffic control and avoid accidents or collisions, signals are provided throughout the track network, or interlocks.

The interlocks may be controlled from the CTC in any of various different ways, including, e.g., direct wiring, by pulse codes sent over a wire to distant locations, etc. In addition, interlocks can also be controlled by a native mechanism detecting presence of a train on the track. That is, **when a train occupies a certain section of track, the interlock prevents other trains from proceeding onto the same**

EX1001, 1:39-2:17 (emphasis added); EX1026, ix, 1, 6-10, 53-56, 59, Figs. 3, 8; Michalson, ¶¶38-39.

It was also conventional for railway workers to operate a mobile device for communicating with a central control system to block and unblock a track. EX1007, Figs. 1-2, 7, [0063], [0068], [0077], [0111], [0119], [0215]; EX1017, Abstract, Figs. 10-11; EX1018, Abstract, 8:5-14, 10:7-10, 11:9-17; Michalson, ¶40. It was further known to generate and communicate a code to authorize train movement. EX1019, Abstract, 4:35-42; EX1021, Abstract, Fig. 4; Michalson, ¶41.

The named inventor admitted to the USPTO that mobile phones, text messaging, and email were conventional before the Priority Date. *See* Section V.B; EX1023, 8 (¶¶ 5-7), 15-16; Michalson, ¶42.

B. Oriol

Oriol (EX1004) was not considered during prosecution of the RE'115 Patent. Oriol was published by the U.S. Department of Transportation, Federal Railroad Administration in October 2004.

Oriol was available to the relevant public in at least two ways: “This document is available to the public through the [1] National Technical Information Service, Springfield, VA 22161. This document is also available on the [2] FRA website at www.fra.dot.gov.” EX1004, front page (emphasis added, alteration added), Report Documentation Page (“12a. Distribution/Availability Statement”), notice page (“This document is disseminated under the sponsorship of the Department of Transportation in the interest of information exchange.”)

Oriol was accessible to a POSITA given the FRA’s statements above that Oriol was “available to the public” (or could be accessed) in multiple ways. Indeed, the Wayback Machine shows Oriol was available at www.fra.dot.gov in, for instance, 2005, 2006, 2008, and 2009. EX1013-1016 (*see* “DOT/FRA/ORD-04/13.i”); EX1022 (Internet Archive affidavit for the websites in EX1013-1016); Michalson, ¶¶60-62. Michalson could access Oriol in EX1013-1016. Michalson, ¶63; EX1022.

Lastly, another reference, Masquelier (EX1005), cites Oriol which further demonstrates that Oriol was available to the public. EX1005, ix, 3, 5, 72; Michalson, ¶64.

Thus, Oriol is prior art under, at least, post-AIA 35 U.S.C. § 102(a) as a POSITA with reasonable diligence could access or locate Oriol in at least two different ways. *GoPro, Inc. v. Contour IP Holding LLC*, 908 F.3d 690, 693 (Fed. Cir. 2018) (qualifies as prior art when “the relevant public has a means of accessing them.”) (citation omitted).

Oriol teaches that a railway worker operates a mobile device (PDA) to request work authorization over the Internet to a central control system, *e.g.*, web server, query server, and database, operated by a dispatcher.

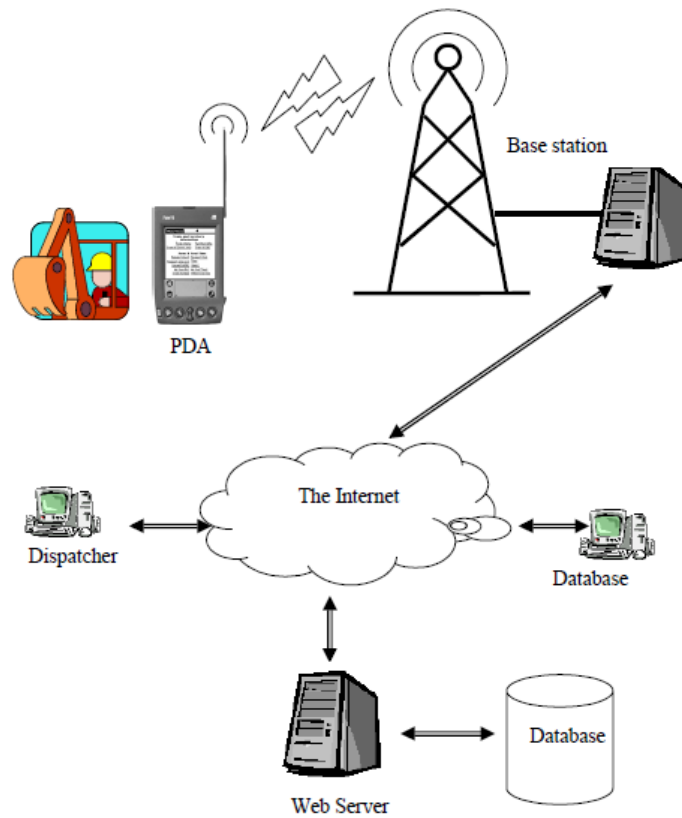


Figure 2. PDA System Architecture

EX1004, Fig. 2, 29. The work authorization can include, *e.g.*, worker’s ““work involves on-track equipment or will disturb the track”” denoted as Form D “Line 4.” *Id.*, 7, 8, Fig. 4.

“If the dispatcher grants the Form D, the appropriate information will be sent to the roadway worker . . . includ[ing] Form D number (automatically assigned by system), Form D recipient . . . and foreman in charge of the track out of service.” *Id.*, 38, 6.

After completing the work, the railway worker from the PDA’s interface selects “Cancel/Fulfill” link to transmit the same Form D number to the dispatcher’s

central control system to unblock the track. *Id.*, Fig. A-1 (“You own these form Ds 0003, North East Corridor . . . Cancel/Fulfill . . . NorthEast Corridor dispatcher has received your request and the form D # 0003 has been cancelled”), 36-37; Michalson, ¶¶65-68.

C. Masquelier

Masquelier (EX1005) was not considered during prosecution of the RE’115 Patent. Masquelier was also published by the U.S. Department of Transportation, Federal Railroad Administration in October 2004.

Masquelier is the second volume of Oriol’s publication and builds upon Oriol’s work. EX1005, title, ix, 3, 5, 72. Like Oriol, Masquelier was available to the relevant public: “This document is **available to the public** through the **National Technical Information Service, Springfield, VA 22161. This document is also available on the FRA website at www.fra.dot.gov.” *Id.*, front page (emphasis added), Report Documentation Page (“12a. Distribution/Availability Statement”), notice page (“This document is disseminated under the sponsorship of the Department of Transportation in the interest of information exchange.”)**

Masquelier was accessible to a POSITA given the FRA’s statements above that Masquelier was “available to the public” (or could be accessed) in multiple ways. Indeed, the Wayback Machine shows Masquelier was available at www.fra.dot.gov in, for instance, 2005, 2006, 2008, and 2009. EX1013-1016 (*see*

“DOT/FRA/ORD-04/13.ii”); EX1022 (Internet Archive affidavit for the websites in EX1013-1016); Michalson, ¶¶70-73. Michalson could access Masquelier in EX1013-1016. Michalson, ¶74; EX1022.

Thus, Masquelier is prior art under, at least, post-AIA 35 U.S.C. § 102(a) given a POSITA with reasonable diligence could access or locate Masquelier in at least two different ways.

Masquelier teaches that a railway worker operates a mobile device to request work authorization, *e.g.*, Form D, over the Internet to the dispatcher’s centralized railway system. EX1005, Abstract, 16-18, Figs. 4-5.

Masquelier teaches performing the same tasks as described in Oriol. *Id.*, 15. It also teaches using a central control system visual interface such that after receiving the work authorization request, and if the work is permitted, the dispatcher will select the interface to block the track. *Id.*, 10-12. This dispatcher interface is shown below in Figure 1.

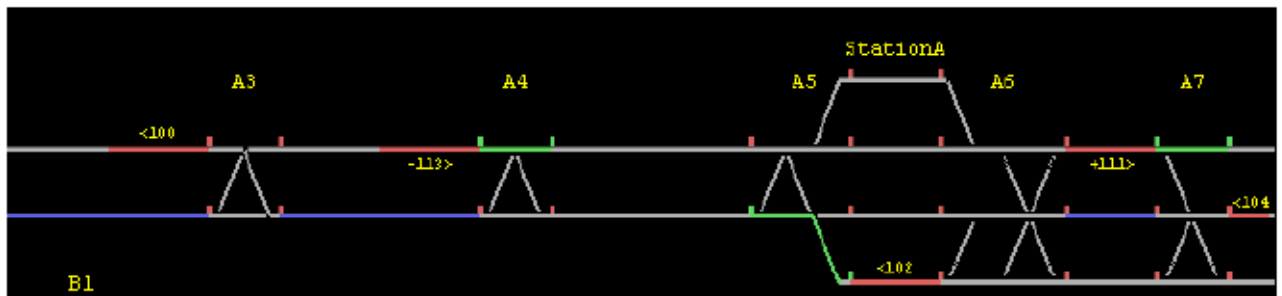


Figure 1. Track Chart Display

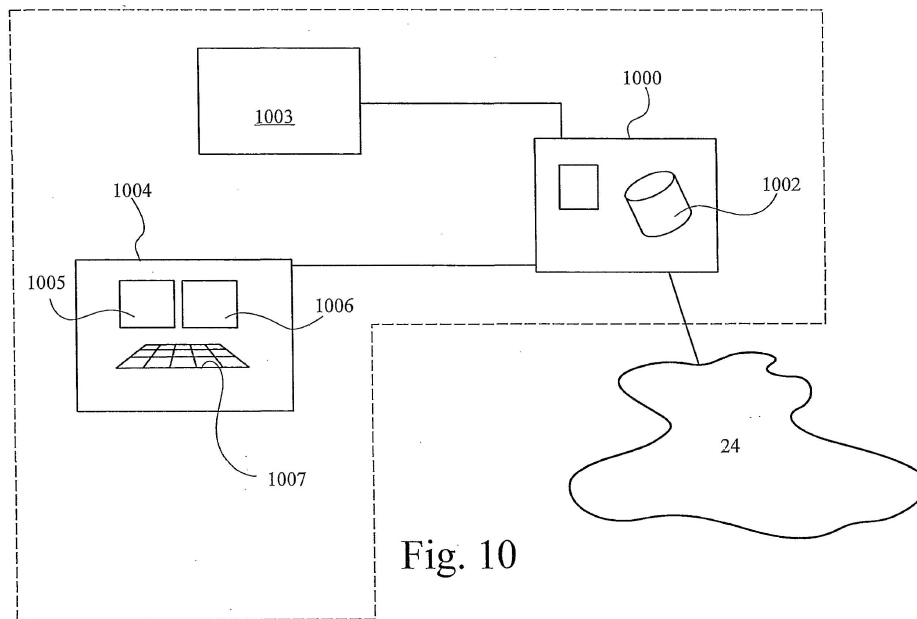
Id., Fig. 1, Table 2 (“Color Code for Monitoring Track Status”). Masquelier further teaches that the dispatcher and railway worker can communicate over text messages (SMS) relating to work authorization. *Id.*, 15, 21, 41.

Once the work is complete, “the roadway worker returns control of the track to the dispatcher, who releases the track for other uses.” *Id.*, 12; Michalson, ¶¶75-78.

D. Wise

Wise (EX1006) was published on May 21, 2004 and is prior art under, at least, post-AIA 35 U.S.C. § 102(a). Wise was cited during the prosecution of the RE’835 Patent and RE’115 Patent. However, the Examiner there did not consider the ground advanced here.

As shown in Figure 10 below, Wise teaches a remote station / call center (central control) with a processor that communicates over a network (Internet) with a worker’s mobile terminal.



Id., Fig. 10, 27:22-28:4, 9:23-28 (“Figure 2 illustrates the remote access system.”), Fig. 2.

After the worker requests a safety measure (green zone), the central control system blocks the track using signal lights and thereafter generates an access code, *e.g.*, safety check number (“SCN”), which is provided to the worker. *Id.*, Fig. 5H (“S553 Press the traffic-light icon on the toolbar & the SCN is automatically generated”), 7:33-8:2 (“[G]reen zone refers to a location where there is a blockage such a[s] traffic lights”), claims 1, 16, 17, 12:6-15, 24:19-26, 29:32-30:3, 30:20-24.

When the work is complete, the worker transmits the same code or “SCN number . . . previously . . . allocated to the job” to the central control system to release the work. *Id.*, 25:4-9; Michalson, ¶¶80-83.

E. Pchl

Pchl (EX1020) issued as a U.S. Patent on February 5, 2008 and is prior art under, at least, post-AIA 35 U.S.C. § 102(a). It teaches a control center with a computer interface and storage to first control the track safety measure and then generate a “checking code.” *Id.*, 3:35-45 (“train control computer to be integrated in the control interface for electronic control systems . . . to control . . . train control sections from one user interface.”), 1:33-36, 1:11-20, 1:54-58, 1:63-66, 4:9-19, Abstract, Fig. 1.

Pchl also teaches that a train controller at the control center uses the interface to enter a code to release the track. *Id.*, 4:50-59, 2:47-60, Fig. 2; Michalson, ¶¶84-86.

F. Analogous Art

Each prior art reference is analogous art to the claimed invention in the RE’115 Patent. And each is in the same field of endeavor of railway control as in the RE’115 Patent. *Compare* EX1001, title, Abstract, 1:29-32, 2:56-59, 4:14-16, *with* EX1004, Abstract, 6, 13-14, 31-39, Figs. A-1-A-4, 2; EX1005, Abstract, 10-12, 15-18, 21, Figs. 1-2, 4, Table 2; EX1006, Abstract, Fig. 5H, claims 1, 16, 17, 7:33-8:2, 12:6-15, 24:19-26, 25:4-9, 27:22-28:4, Figs. 2, 10; EX1007, Abstract, Figs. 1-2, [0082], [0089], [0167]; EX1020, 1:5-9, 1:33-36, 1:54-66, 3:35-45, 4:9-15, 4:50-59, Abstract, Figs. 1-2, title, claim 1; EX1019, Abstract, 4:35-53, claims 14-

15; EX1021, Abstract, Fig. 4, 4:10-17, 4:48-65, 5:24-30, 5:59-6:9, claim 1; EX1018, Abstract, 1:13-2:2, 5:1-11; EX1017, Abstract, 3:9-15, Figs. 10-11; EX1026, ix, 1, 6-10, 53-56, 59, Figs. 3, 8; Michalson, ¶88.

Additionally, each is reasonably pertinent to any purported problem addressed in the RE'115 Patent. *Id.*; EX1001, title, Abstract, 1:29-32, 2:56-59, 4:14-16; Michalson, ¶89.

IX. SPECIFIC GROUNDS

A. Ground 1: Claims 20-36 Are Obvious Over Oriol and Masquelier

1. Motivation to Combine; Reasonable Expectation of Success

Masquelier is the second volume to Oriol's publication and cites Oriol several times, such as Masquelier states the "continuing development and evaluation of the [Oriol] application" EX1005, 3, title (similar title as Oriol), ix, 5, 72; Michalson, ¶90. Thus, a POSITA would naturally have been motivated to combine them with a reasonable expectation of success. Michalson, ¶90.

A POSITA would have been motivated to modify Oriol with Masquelier and had a reasonable expectation of success given both Oriol and Masquelier were published by the U.S. Department of Transportation FRA, share two overlapping authors, and discuss solutions using the same types of devices. EX1004, cover page, Report Documentation Page, title, Abstract, 6-8, 29, 38, Figs. A-1-A4, 2, 4; EX1005, cover page, Report Documentation Page, title, Abstract, ix, 3, 5, 72; Michalson, ¶91.

There also would have been a motivation to combine and a reasonable expectation of success because both publications are in the field of, and solve the problem of, railway control for safe maintenance work and both have substantially similar network architecture and describe track blocking and unblocking using signals. EX1004, Abstract, 1, 6, 29, 37-38, Figs. A-1-A4, 2, 4; EX1005, Abstract, ix, 3, 5, 10-12, 16, Figs. 1, 4, Table 2; Michalson, ¶92.

Thus, a POSITA would have been motivated and had a reasonable expectation of success to modify Oriol, including with Masquelier's visual track blocking and unblocking systems and processes. *Intel Corp. v. PACT XPP Schweiz AG*, 61 F.4th 1373, 1381 (Fed. Cir. 2023) ("It's enough for Intel to show that there was a known problem . . . in the art Nothing more is required to show a motivation to combine").

For instance, a POSITA would have been motivated to modify Oriol with Masquelier's central control visual interface using signals to control interlocks for track blocking and unblocking to improve safety and efficiency. Michalson, ¶93.

A POSITA would have had a reasonable expectation of success because Oriol includes central control blocking and unblocking based on the Form D number. EX1004, Abstract, 6, 29, 37-38, 41 ("[t]he system is designed to be highly configurable"), Figs. A-1-A4, 2, 4; Michalson, ¶94.

Indeed, a POSITA would have been motivated and had a reasonable

expectation of success to use a “centralized traffic control” interface for track blocking and unblocking using signals to control interlocks because the RE’115 Patent concedes and another reference teaches it was known to a POSITA. *See* Section VIII.A; EX1001, 1:39-2:17; EX1026², ix, 1, 6-10, 53-56, 59, Figs. 3, 8; Michalson, ¶95.

2. Claim 20

- a. **20[Pre]:** *“A railway control apparatus for centralized control of a centrally controllable railway network including plural railways and a plurality of railway interlocks dispersed in said plural railways, comprising:”*

Oriol and Masquelier teach 20[Pre]. Michalson, ¶¶96-109.

Oriol teaches the railway traffic control apparatus which consists of at least the dispatcher’s computer, database, and web server (query server) with associated database that communicates over a network (Internet) with a user terminal (PDA), as shown below.

² Malsch is prior art because a POSITA could access Malsch (like Oriol and Masquelier) in at least two ways such as www.fra.dot.gov. EX1026, front page, Report Documentation Page; EX1013-1016 (see “DOT/FRA/ORD-04/11”); EX1022; Michalson, ¶¶106-107.

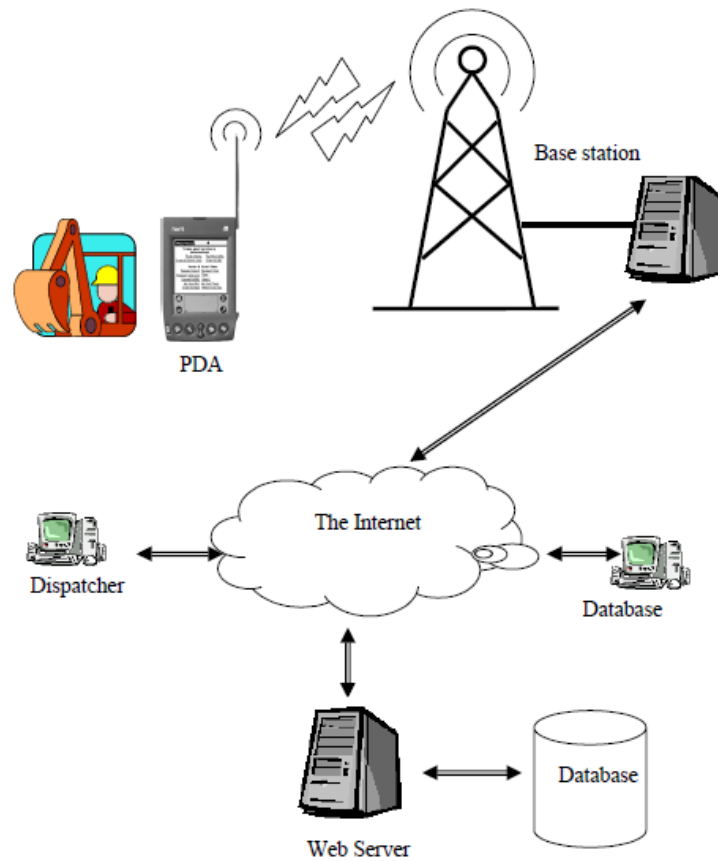


Figure 2. PDA System Architecture

EX1004, Fig. 2, 6, 31.

Oriol teaches “centralized control of a centrally controllable railway network”—“Central Traffic Control”—such as “North East Corridor dispatcher” to control over the Internet the blocking and unblocking of tracks based on a work authorization (Form D) request from a worker’s mobile phone (PDA). *Id.*, 6 (“When a dispatcher receives a request for roadway worker protection . . . [and if] the dispatcher grants permission to work, (under . . . Form D . . .) the track is placed off-limits (blocked) for other uses. In Central Traffic Control (CTC) territory, blocking a track protects the roadway worker since it prevents the dispatcher from routing

trains on that track.”), Figs. A-1, A-3 (“**North East Corridor dispatcher** has received your request . . . 2 track out of service”) (emphasis in original), iv, 1 (“centralized traffic control territory”), Abstract (“A prototype communications device was developed for roadway workers . . . to request track protection” from “dispatchers at the Central Traffic Control Center”), Fig. 2 (showing centralized system), 37, iii, 13-14, 29, 31-32, 58; Michalson, ¶¶97-98.

Masquelier teaches that this railway network includes plural railways and interlocks, including the central dispatcher having a user interface (track display) to transmit a signal to interlock(s), *e.g.*, blocking or unblocking signal, to control blocking and unblocking of railway track(s):

Each dispatcher is in charge of a specific territory where he/she has authority to route the trains, **take tracks out of service, and grant work authorizations. Each dispatcher has a workstation to control the switches and signals. This workstation also displays a representation of the track (see Figure 1). Track displays use scale compression extensively to show more details around crucial points such as stations and interlockings.**

...

If the dispatcher intended to grant work authorization, the dispatcher proceeded to protect the requested track. At the **Traffic Control**

Center, the dispatcher could use the track display to protect the track segment in question using software that controlled various switched and signals in the field. . . . Operation of these switches is restricted and the protected track will display stop signals at both ends.

. . .

Once the job is complete, the roadway worker returns control of the track to the dispatcher, who releases the track for other uses.

EX1005, 10-12 (emphasis added), 68 (“**Interlocking**: An interconnection of signals and signals appliances”) (emphasis in original); 67 (“**Block Signal**: A fixed signal displayed to trains at the entrance to a block to govern use of that block.”) (emphasis in original, footnote omitted); EX1004, 1 (“In centralized traffic control territory, switches and signals receive commands from the dispatcher’s computer.”), 6; Michalson, ¶99.

The central control user interface with plural railways to transmit a signal to interlock(s) for controlling blocking and unblocking of railway track(s) is also shown in Figure 1 and Table 2 below. For instance, the interlocks in Figure 1 for the tracks in blue have been controlled such that a “portion of track has been protected for use by maintenance” (track blocked) and the interlocks in green have “been cleared (authorized for use) for train movement” (track unblocked). EX1005, Table 2 (“Monitoring Track Status”); Michalson, ¶¶100-101.

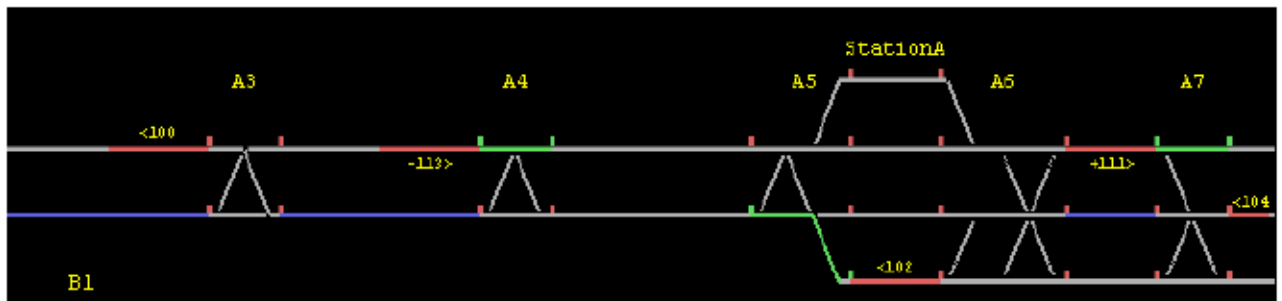


Figure 1. Track Chart Display

EX1005, Fig. 1.

Table 2. Representation of Color Code for Monitoring Track Status

Color	Meaning
White	Indicates that the track segment is available for routing trains or other uses.
Red	Means train or track vehicle occupancy. A train currently occupies that block.
Green	Indicates that the track segment has been cleared (authorized for use) for train movement. The train has not yet entered this block.
Blue	Indicates that a track section is authorized for track maintenance. This means that a portion of track has been protected for use by maintenance of way crews or track equipment. When the dispatcher gives track authority to a work crew, the dispatcher temporarily loses control over that section of track. Trains cannot enter this track segment unless authorized by the roadway worker responsible for that block.

Id., Table 2; Michalson, ¶102.

Oriol also stores the track information, including the interlocking information. EX1004, 39 (“The database includes information Track information (Track Info.txt). Includes information about all the **locations along the track** (milepost, dispatcher in charge, maximum train speed, **interlocking** or **station**”) (emphasis added), 15; Michalson, ¶103.

Additionally, it was known to a POSITA to have centralized control of a centrally controllable railway network with plural railways and interlocks as the

RE'115 Patent admits and another reference teaches. *See* Section VIII.A; EX1001, 1:39-2:17; EX1026, ix, 1, 6 (“routing interface displayed the track layout and was modeled after a Central Traffic Control (CTC) based signal system.”), 7-10, 53-56, 59, Figs. 3 (“Active Track Layout” with “Block Track” and “Unblock Track” for interlockings), 8; Michalson, ¶¶38-39, 104-109; *Randall Mfg. v. Rea*, 733 F.3d 1355, 1362-63 (Fed. Cir. 2013); *Lyft, Inc. v. Agis Software Development LLC*, IPR2022-00513, Paper 24, fn 13 (PTAB May 25, 2023); *McCoy v. Heal Sys., LLC*, 850 F. App'x 785, 789 (Fed. Cir. 2021) (“By characterizing certain parts as conventional in the specification, the patentee effectively admits that such things would be known to a POSA.”)

- b. 20[A]: *“a processor for controlling a plurality of track sections in the railway network, wherein each track section is associated with a corresponding interlock and is disposed in any of said plural railways of said railway network that is managed by centralized control operation from the railway control apparatus, the processor controlling, by said centralized control operation, one or more interlocks amongst the plurality of railway interlocks dispersed in said plural railways of said railway network, to block railway traffic to one or more specified track sections; and”*

Oriol and Masquelier teach 20[A]. Michalson, ¶¶110-122.

The railway control apparatus' computer and web server (query server) with associated database would each have a processor and a non-transitory medium such as a hard drive, memory, or other storage for storing one or more programs of

executable instructions. *See* 20[Pre]; Michalson, ¶¶111-112. Additionally, implementing a program with executable instructions in a computer is known to a POSITA. EX1007, [0067], [0351], [0353]; Michalson, ¶113.

Oriol describes the above components as computers, which would each have a processor and non-transitory medium, and they along with the PDA use software. EX1004, Fig. 2 (showing computers), 31 (“dispatcher’s terminal” and query/web server described as a “computer”), 36 (“query servers used in this study were mainly written in Java (Sun Microsystems, 2001) [A] Common Gateway Interface (CGI) script . . . [was] used as an interface between the web server and the query servers. It reads the HTML forms as sent by the PDA . . . and returns the requested information to the PDA.”), 38-40, 11, Figs. A-1-A-5; Michalson, ¶114.

Oriol and Masquelier teach that “each track section is associated with a corresponding interlock and is disposed in any of said plural railways of said railway network that is managed by centralized control operation from the railway control apparatus.” *See* 20[Pre].

Based on a work authorization request (Form D), the railway control apparatus (or processor) managed by centralized control operation blocks the track (“out of service”). EX1004, 38 (“If the dispatcher grants the Form D, the appropriate information will be sent to the roadway worker . . . includ[ing] Form D number (automatically assigned by system) . . . foreman in charge of the track out of

service.”), 36-37, 6 (“When a dispatcher receives a request for roadway worker protection . . . [and if] the dispatcher grants permission to work, (under . . . Form D . . .) the track is placed off-limits (blocked) for other uses.”), A-3 (blocking track based on a work authorization request); Michalson, ¶116.

The railway control apparatus’ processor will block this track by transmitting a block signal to control the interlocks to display stop signals, which will protect or block the track for the worker. EX1005, 1, 10-11 (“Each dispatcher has a workstation to control the switches and signals. This workstation also displays a representation of the track (see Figure 1). Track displays use scale compression extensively to show more details around crucial points such as stations and interlockings.”), 11-12 (“At the Traffic Control Center, the dispatcher could use the track display to protect the track segment in question using software that controlled various switched and signals in the field. . . . Operation of these switches is restricted and the protected track will display stop signals at both ends.”), Fig. 1, Table 2, 67 (“**Block Signal:** A fixed signal displayed to trains at the entrance to a block to govern use of that block.”) (emphasis in original, footnote omitted); EX1004, 6 (“signals (wayside and in-cab) for the blocked track will display a stop signal at both ends to prevent movement by unauthorized track vehicles.”), 36-38, A-3; *see* 20[Pre]; Michalson, ¶117.

This is also shown in Figure 1 (discussed previously) which automatically monitors and updates the track status based on, *e.g.*, the railway control apparatus blocking and unblocking the track. EX1005, Table 2 (“Monitoring Track Status”); Michalson, ¶¶118-119. For instance, Figure 1 shows that the railway control apparatus’ processor controlling the interlocks in the plural railways of the railway network to block railway traffic to one or more specified track sections, *e.g.*, tracks and interlocks in blue have been controlled such that a “portion of track has been protected for use by maintenance” (blocked). EX1005, Table 2, Fig. 1; Michalson, ¶119.

Additionally, the RE’115 Patent admits it was known to a POSITA that each track has a corresponding interlock controlled by centralized control operation, such as transmitting a signal to interlock(s), *e.g.*, blocking or unblocking signal, to control blocking and unblocking of railway track(s). *See* Section VIII.A; EX1001, 1:39-2:17; Michalson, ¶¶38-39, 120.

Malsch also teaches it was known to a POSITA for the central control of one or more interlocks to block railway traffic to one or more specified track sections. EX1026, ix, 1, 6-10, 53-56, 59, Figs. 3, 8; Michalson, ¶¶121-122.

The main routing tasks were accomplished using mouse-activated buttons located at the bottom of the screen; clearing and unclearing a route as well as blocking and unblocking tracks.

....

The dispatcher blocked a track to enable roadway workers and their equipment to occupy the track. Unblocking the track removed this protection for the roadway worker crew and equipment and made the track available for train movements or other MOW crews. The simulator propagated the state of the signal to the adjacent block.

EX1026, 9, 59. This is shown in Figure 3 with “Block Track” and “Unblock Track” buttons for interlockings and Figure 8 below:

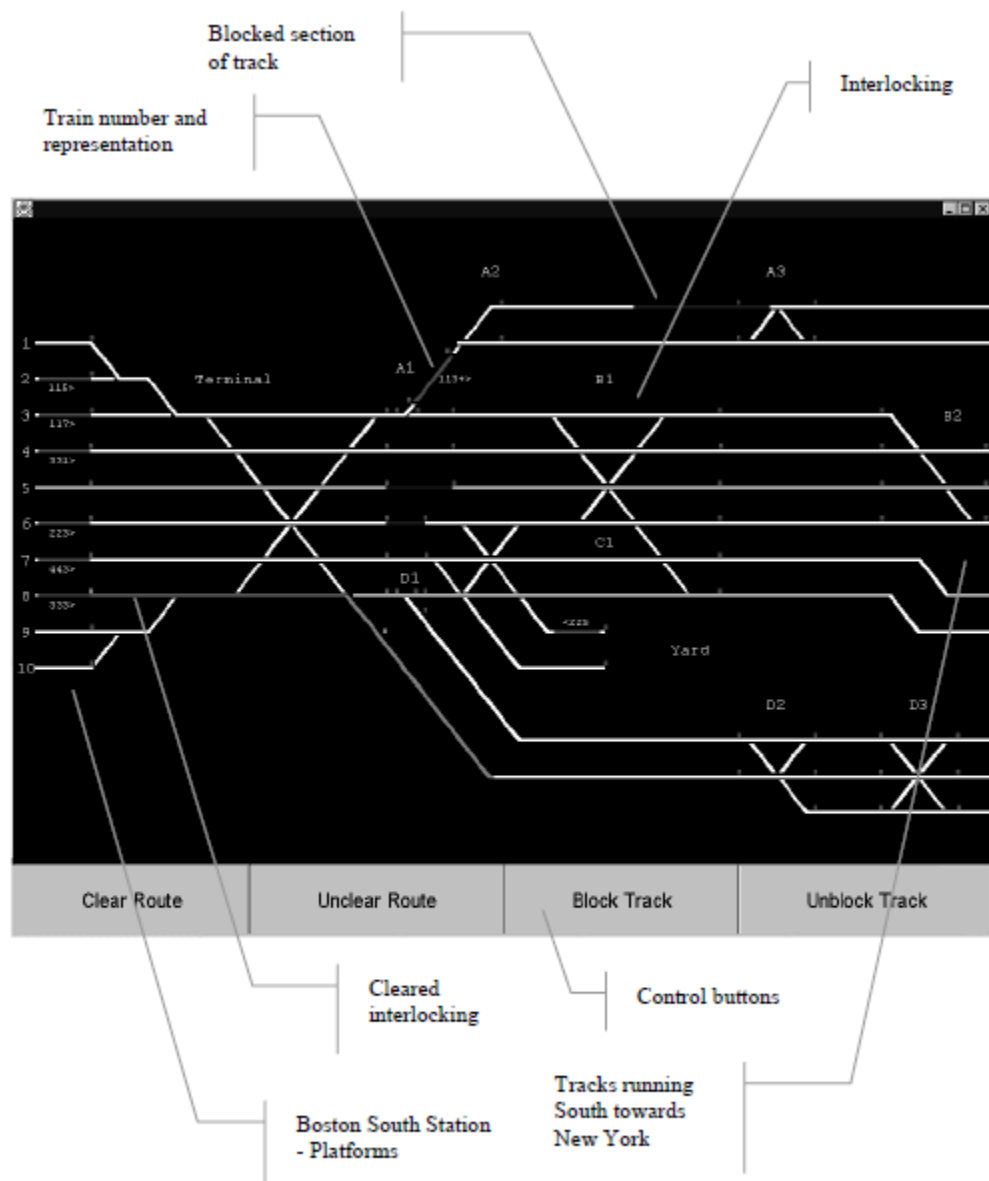


Figure 3. Active Track Layout

Id., Fig. 3.



Figure 8. Track Layout

Id., Fig. 8.

- c. **20[B]: “a memory device storing computer-executable instructions, wherein execution of the computer-executable instructions by the processor causes the railway control apparatus to: receive a selection of at least one track section amongst the plurality of track sections;”**

Oriol and Masquelier teach 20[B]. Michalson, ¶¶123-127.

As discussed in 20[Pre]-[A], the railway control apparatus has a workstation and a processor with a non-transitory medium such as a hard drive, memory, or other storage for storing computer-executable instructions. *See also* EX1004, Fig. 2, 31 (“dispatcher’s terminal” and query/web server described as a “computer”), 36 (“query servers used in this study were mainly written in Java (Sun Microsystems, 2001) [A] Common Gateway Interface (CGI) script . . . [was] used as an interface between the web server and the query servers.”), 38-40, 11, Figs. A-1-A-5; Michalson, ¶124.

Based on the railway control apparatus’ processor executing the instructions, the railway control apparatus receives the selection of at least one track section among the plurality of track sections. For instance, the dispatcher in central control can select the track display to control the interlock switch(es) to display stop signals for blocking the track.

Each dispatcher is in charge of a specific territory where he/she has authority to route the trains, take tracks out of service, and grant work authorizations. Each **dispatcher has a workstation to control the**

switches and signals. This workstation also displays a representation of the track (see **Figure 1**).

. . .

If the **dispatcher intended to grant work authorization, the dispatcher proceeded to protect the requested track.** At the **Traffic Control Center, the dispatcher could use the track display to protect the track segment in question using software that controlled various switched and signals in the field**

. . .

Operation of these switches is restricted and the protected track will display **stop signals at both ends.**

EX1005, 10-12 (emphasis added), Fig. 1, Table 2; EX1004, 6 (“In Central Traffic Control (CTC) territory . . . signals (wayside and in-cab) for the blocked track will display a stop signal at both ends to prevent movement by unauthorized track vehicles.”), 1, 8, 36-38, A-3; Michalson, ¶125.

This is further shown in Figure 1 and Table 2 (*see* claim 20[Pre]-[A]), where track display automatically updates based on the railway control apparatus receiving a track selection. EX1005, Fig. 1 (tracks and interlocks in blue have been selected such that a “portion of track has been protected for use by maintenance” or blocked), Table 2, 10 (“The current study focused on signal territories, where dispatchers

receive automatic indication of train location.”), 1 (“In signal territory, the track equipment provides dispatchers with information about signal states, switch states, and train location.”); Michalson, ¶126.

Additionally, it was known to a POSITA for a central control system to “receive a selection of at least one track section amongst the plurality of track sections.” *See* Section VIII.A; EX1001, 1:39-2:17; EX1026, 53 (“6. To block a route for MOW activity, click first on the ‘block’ button at the bottom of the screen. **Then click on the part of the track you are giving away.** You have to **repeat the process if you want to block more track.**”) (emphasis added), 9, ix (“Using the track layout screens, the dispatcher routed trains, blocked track, cleared routes, and took other actions to control equipment in the field.”), 6-8, 1, 10, 54-56, 59, Figs. 3, 8; Michalson, ¶¶38-39, 127.

- d. 20[C]: *“transmit a block signal to the corresponding interlock associated with the at least one selected track section, to place a block on the selected track section by said centralized control operation from the railway control apparatus;”*

Oriol and Masquelier teach 20[C]. Michalson, ¶¶128-132.

As discussed above, the centralized control operation from the railway control apparatus blocks the selected track by transmitting a block signal to the corresponding interlocks associated with the track causing the display of stop signals. *See* 20[Pre]-[B].

For instance, the dispatcher blocks the track by selecting the track on the display, and based on the railway control apparatus' processor executing the instructions (*see* 20[B]), it transmits a block signal to the interlocks to display stop signals which will protect the track for the worker:

Each dispatcher is in charge of a specific territory where he/she has authority to route the trains, **take tracks out of service, and grant work authorizations. Each dispatcher has a workstation to control the switches and signals. This workstation also displays a representation of the track (see Figure 1).** Track displays use scale compression extensively to show more details around **crucial points such as stations and interlockings.**

. . .

If the dispatcher intended to grant work authorization, the dispatcher proceeded to protect the requested track. At the **Traffic Control Center, the dispatcher could use the track display to protect the track segment in question using software that controlled various switched and signals in the field.**

. . .

Operation of **these switches is restricted and the protected track will display stop signals at both ends.**

EX1005, 10-12 (emphasis added), 68 (“**Interlocking**: An interconnection of signals and signals appliances”) (emphasis in original); 67 (“**Block Signal**: A fixed signal displayed to trains at the entrance to a block to govern use of that block.”) (emphasis in original, footnote omitted); EX1004, 6 (“signals (wayside and in-cab) for the blocked track will display a stop signal at both ends to prevent movement by unauthorized track vehicles.”), 1, 8; *see* 20[A]-[B]; Michalson, ¶¶129-130.

Further, Figure 1 below shows that the railway control apparatus’ processor blocks the selected track by transmitting a block signal to the corresponding interlocks associated with the track, *e.g.*, tracks and interlocks in blue have been controlled such that a “portion of track has been protected for use by maintenance” (blocked). EX1005, Table 2.

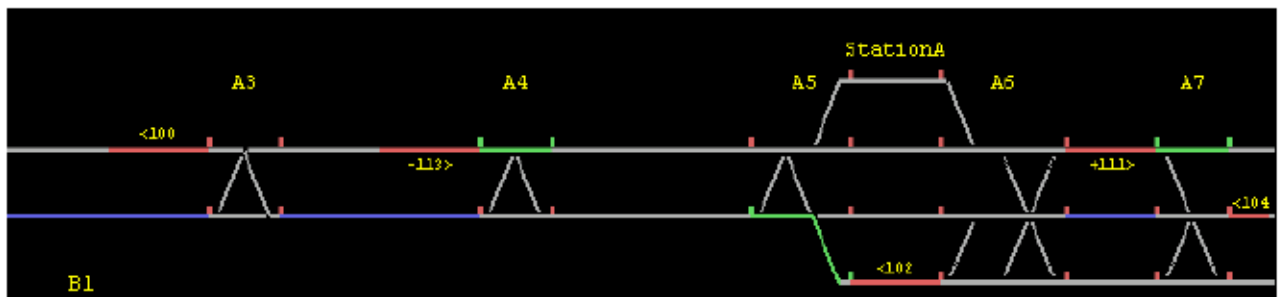


Figure 1. Track Chart Display

Id., Fig. 1; Michalson, ¶131.

Additionally, it was known to a POSITA for centralized control to transmit a block signal to the corresponding interlock associated with the selected track section to place a block on the track. *See* Section VIII.A; EX1001, 1:39-2:17; EX1026, 53

(“6. To block a route for MOW activity, click first on the ‘block’ button at the bottom of the screen. Then click on the part of the track you are giving away. You have to repeat the process if you want to block more track.”), 9 (“A two-aspect signal system (clear route or route occupied) was implemented. The dispatcher blocked a track to enable roadway workers and their equipment to occupy the track.”), 59, ix (“Using the track layout screens, the dispatcher routed trains, blocked track, cleared routes, and took other actions to control equipment in the field.”), 1, 6-8, 10, 54-56, Figs. 3, 8; Michalson, ¶¶38-39, 132.

e. 20[D]: “*generate a secret code associated with the at least one selected track section; and*”

Oriol and Masquelier teach 20[D]. Michalson, ¶¶133-147.

As discussed in claim 20[A]-[C], if the Form D or work authorization is granted, Oriol and Masquelier will block the track by selecting the track display. *See* 20[A]-[C]; EX1004 6 (“When a dispatcher receives a request for roadway worker protection . . . [and if] the dispatcher grants permission to work, (under . . . Form D . . .) the track is placed off-limits (blocked) for other uses.”); EX1005, 10-12, Fig. 1, Table 2; Michalson, ¶134.

The railway control apparatus’ processor executing the instructions (*see* 20[B]) will further generate a “Form D number (automatically assigned by system)” or secret code and transmit that code with the “track out of service” to the worker.

EX1004, 38 (Form D line 4: “**If the dispatcher grants the Form D, the appropriate information will be sent to the roadway worker who requested it.** This information includes **Form D number (automatically assigned by system),** Form D recipient, date, track number, **track location,** and foreman in charge of the **track out of service.**”) (emphasis added), 38 (Form D lines 2 and 3: “Form D number (automatically assigned by system)”); Michalson, ¶135.

The secret code is associated with at least one selected track section (*see* 20[C]) because the secret code is generated based on blocking the track, stored in the database, and “sent to the roadway worker” with the “track out of service” (or blocked track). EX1004, 38, 14, 31 (database stores “out of service track under Form D”), 39, 37, Figs. A-1, A-3; Michalson, ¶136.

The claim language does not describe the “secret code” and what makes a code “secret,” including failing to detail any specific level of security. *See also* EX1001, 6:6-9 (no specifics); Michalson, ¶137.

Nevertheless, the Form D number is a secret code because the generated Form D number is sent to a specific registered worker “who requested it” (EX1004, 38) and who only can cancel the same Form D number (or under his authority) to remove the track block. *Id.*, 57 (“Each Palm VII device had a built in device ID that could be sent with every message. This **device ID was used to identify which roadway worker was sending each request.**”) (emphasis added), 36 (“worker can retrieve a

list of Form Ds . . . under his/her authority . . . [and] [f]ollowing the link[] ‘Cancel/Fulfill’ . . . the roadway worker is able to give some track under his authority back to the dispatcher.”), 39, 37, Fig. A-1; Michalson, ¶138.

Moreover, the central control system-worker communications were secured and protected, including by “cryptographic technology.” EX1004, 57-58 (“The Palm VII incorporated several levels of protection Palm VII used a cryptographic technology . . [and there] were also other levels of security such as network authentication”); Michalson, ¶139.

Thus, the Form D number is a secret code given the worker can only access the Form D number “under his/her authority” and given the secured communications. Michalson, ¶140.

To extent the secret code must have even further security, this was known to a POSITA. EX1021, 4:8-9 (“Software within the LCU 40 could be used to generate a random number as the basis for the unique code.”); EX1019, 4:39-53 (“secure code generator 11 at the dispatch office generates the secure code” and can use a “multiple digit number generation algorithm”), 5:40-52 (encrypted code); Michalson, ¶141.

The railway control apparatus generating the secret code and associating it with a track section is also shown in Figure A-3, particularly “**Form D Line 4 Request . . . North East Corridor dispatcher** has received your request . . . **Please confirm Form D 0001 . . . Delivered to: Oriol . . . 2 track out of service**

between/at Providence and Lawn in charge of Oriol” EX1004, Fig. A-3 (emphasis added),³ A-5 (dispatcher interface: “**Form D 0003 is Requested** . . . Form D #: 0003 Delivered to: Oriol . . . track out of service . . . Send Response [button].”) (emphasis in original), A-1 (“You own these form Ds 0003, NorthEast Corridor . . . NorthEast Corridor dispatcher has received your request and the form D # 0003 has been cancelled.”); Michalson, ¶142.

To the extent it is argued for claim limitations 20[D], 30[F], and 31[E] that the code should be generated after the track is blocked, Oriol teaches this as discussed above. EX1004, 38 (block track and then transmit the generated Form D number), Fig. A-3 (request track block, then block the track, and then send the generated Form D number with the tracked blocked), A-5; Michalson, ¶143.

Nevertheless, a POSITA would have been motivated to modify Oriol and Masquelier to first block the track by selecting the interface discussed previously

³ Form D 0001 appears to be a typographical error as it should state Form D 0003 since Form D 0003 is later used in the same diagram, the dispatcher’s interface shows Form D 0003 (EX1004, Fig. A-5), and worker cancels Form D 0003 (*id.*, Fig. A-1). Also, the “Form D Lines 2,3” diagram shows that the same Form D number (Form D 0005) twice, just as the Form D 0003 should appear. *Id.*, Fig. A-3. Michalson, ¶142 n.2.

(see 20[A]-[C]) and thereafter generating the code as this is merely one of two possible design choices. Michalson, ¶144.

Additionally, this modification could enhance safety and security as the central control system would only generate the code once the block has been implemented as otherwise the secret code could be unsafely or incorrectly used before the track is blocked. Michalson, ¶145.

A POSITA would have a reasonable expectation of success because Oriol and Masquelier could generate a temporary number or other placeholder and then once the track is blocked, generate the Form D number to provide greater security and safety as the Form D number or secret code would not be known until the track is blocked. Michalson, ¶146. Indeed, Oriol and Masquelier's railway control apparatus has existing hardware and software to visually block the track and then generate and transmit a Form D number. See 20[A]-[B]; Michalson, ¶147.

f. 20[E]: “*transmit the secret code to a remote user terminal.*”

Oriol and Masquelier teach 20[E]. See 20[D]; Michalson, ¶¶148-150.

The railway control apparatus communicates with a remote user terminal (PDA). See 20[Pre]; EX1004, Fig. 1 (“Personal Digital Assistant”), 29 (“The PDA also enabled the roadway worker to request a variety of work authorizations (Form D and Foul Time).”), 11 (“[A] software application was developed for use on a PDA with wireless communication capabilities” and “between roadway workers and

dispatchers.”), 39 (“The database includes . . . Roadway workers (MWForemen.txt). Includes information about registered PDAs and their owner.”) (emphasis in original), 57 (“Each Palm VII device had a built in device ID . . . [and this] device ID was used to identify which roadway worker was sending each request.”); EX1005, 15 (“Qualcomm® pdQ™ Smartphone 800”), 21, 41, Figs. 2, 4-5; Michalson, ¶149.

Based on the railway control apparatus’ processor executing the instructions (*see* 20[B]), the secret code or Form D number is transmitted to a remote user terminal or PDA. *See* 20[Pre], [D]; EX1004 38 (“If the dispatcher grants the Form D, the appropriate information will be sent to the roadway worker who requested it. This information includes Form D number (automatically assigned by system)”), Fig. A-3 (“Form D Line 4 Request . . . North East Corridor dispatcher has received your request . . . Please confirm Form D 0001 . . . Delivered to: Oriol . . . 2 track out of service”) (emphasis removed), 37 (“**Dispatcher Query Server.** Handles requests sent by the PDA that need dispatcher interaction such as requests that have to do with work permissions and answers sent by dispatcher to the PDA”) (emphasis in original), 36, 29, 11, Figs. 1-2 (dispatcher’s terminal transmitting data to PDA), A-5; Michalson, ¶150.

3. Claim 30

a. 30[Pre] — Use Railway Control Apparatus

See 20[Pre]; Michalson, ¶151.

b. 30[A] — Use Railway Network with Interlocks

See 20[Pre]-[A]; Michalson, ¶152.

c. 30[B] — Receive Track Selection

See 20[B]; Michalson, ¶153.

d. 30[C] — Determine Track Selection Has Block

See 20[B]-[C]; Michalson, ¶¶154-162.

Claim 30[C] recites, “responsive to receiving the selection of the at least one track section, determine that the at least one selected track section has an existing block.”

As discussed in claim 20[B]-[C], the dispatcher in the centralized control system selects the track display to control the interlock switches using signals for blocking and unblocking the track. *See* 20[B]-[C]. Specifically, the color blue in the below track display indicates a “portion of track has been protected for use by maintenance” (track blocked); green indicates the tracks have “been cleared (authorized for use) for train movement”; red indicates the “train currently occupies that block”; and white indicates the track “is available for routing trains or other uses.” EX1005, Table 2, 10-12.

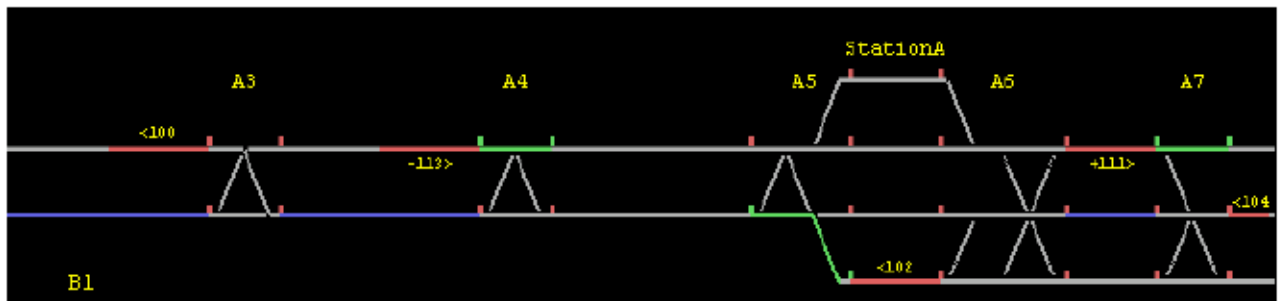


Figure 1. Track Chart Display

Id., Fig. 1. Thus, a dispatcher could select a track and determine that the track is blocked based on the track being shown as blue. Michalson, ¶¶156-158.

Also, Oriol and Masquelier teach that the real-time status of the track as shown in Figure 1 and Table 2 is automatically monitored and updated as trains move, and tracks are blocked and unblocked by the dispatcher. EX1005, Fig. 1, Table 2 (“Representation of Color Code for Monitoring Track Status”), 10 (“The current study focused on signal territories, where dispatchers receive automatic indication of train location.”), 1 (“In signal territory, the track equipment provides dispatchers with information about signal states, switch states, and train location.”); Michalson, ¶159.

Because the track display is constantly updated, a dispatcher could select a track (in white) to block only for it to subsequently change to blue preventing the attempted track block for the worker. Michalson, ¶160.

Additionally, the RE'115 Patent admits it was known to a POSITA to determine if a track is blocked from operating (selecting) a “control console” based on signals received at centralized control to ensure a safe system.

Information regarding track conditions, train traffic, scheduling, etc., are presented on a control console which may include a map of the entire rail system controlled by the CTC. Through the control console, the dispatcher has control of each interlock signal (that is, the dispatcher controls the train traffic and flow of train traffic using the interlocks) **and is constantly made aware of the positions of trains in the railway system as such positions are electronically reported by signals present throughout the railway system.** In addition, in order to provide for safe traffic control and avoid accidents or collisions, signals are provided throughout the track network, or interlocks.

See EX1001, 1:39-2:17 (emphasis added); *see* Section VIII.A; Michalson, ¶¶38-39, 161.

Another reference also demonstrates that it was known to a POSTIA to determine if the track selection has an existing block. EX1026, 8 (“[A] color-coded track display with text to display the current track state. . . . The color of individual track segments (referred to as blocks) represented how the track was allocated. . . . Blue Indicates track work is occurring”), 10 (“Figure 3. Active Track Layout”), 53

(“5. The route will unclear automatically if a train has used it. The color of the track will change back to white. 6. To block a route for MOW activity, click first on the ‘block’ button at the bottom of the screen. Then click on the part of the track you are giving away.”), 6-7, 9, 54-56, 59, ix, 1, Figs. 3, 8; Michalson, ¶162.

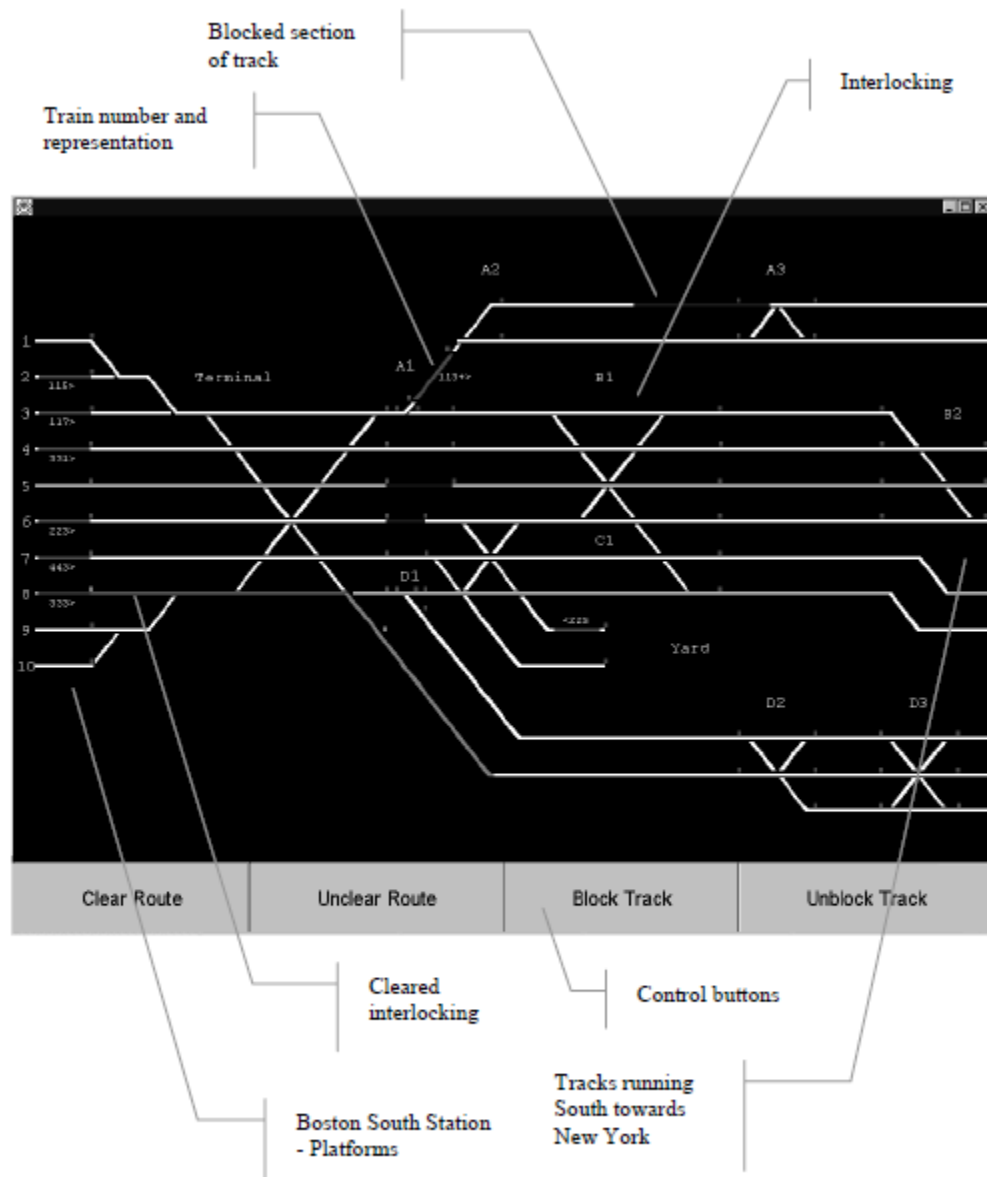


Figure 3. Active Track Layout

Id., Fig. 3.



Figure 8. Track Layout

Id., Fig. 8; Michalson, ¶162.

e. 30[D] — Receive Signal New Block Established

See 20[B]-[C], 30[C]; Michalson, ¶¶163-170.

Claim 30[D] recites, “receive a signal from the corresponding interlock of the at least one selected track section that a new block can be established.”

As discussed in claim 30[C], the track display is constantly monitored and updated with colors changing as the tracks become blocked and unblocked because of trains and worker protection. *See* 30[C].

And, “[e]ach dispatcher is in charge of a specific territory where he/she has authority to [1] route the trains, [2] take tracks out of service, and [3] grant work authorizations. Each dispatcher has a workstation to control the switches and signals. This workstation also displays a representation of the track (see Figure 1).” EX1005, 10-11 (alterations added).

Thus, the track display will automatically update when it receives a signal from the interlock for the selected track section indicating the track is clear (shown in the color “White”) that a new block can be established for the worker. EX1005, Fig. 1, Table 2 (“Representation of Color Code for Monitoring Track Status”), 1 (“In signal territory, the track equipment provides dispatchers with information about signal states, switch states, and train location.”), 10 (“The current study focused on

signal territories, where dispatchers receive automatic indication of train location.”); *see* 30[C]; Michalson, ¶¶165-167.

For instance, the dispatcher could visually see the selected track change from blue to white, or the dispatcher could attempt to select the same track again and the railway control apparatus permits this time the track to be blocked. EX1005, 11 (“If the dispatcher intended to grant work authorization, the dispatcher proceeded to protect the requested track. At the Traffic Control Center, the dispatcher could use the track display to protect the track segment in question using software that controlled various switched and signals in the field”); Michalson, ¶168.

Additionally, the RE’115 Patent admits it was known to a POSITA to determine a track is available from operating (or selecting) a “control console” based on signals received at centralized control to ensure a safe system. EX1001, 1:39-2:17; *see* Section VIII.A; Michalson, ¶¶38-39, 169.

Another reference also demonstrates it was known to a POSTIA to receive a signal when a new block can be established. EX1026, 8 (“[A] color-coded track display with text to display the current track state. . . . The color of individual track segments (referred to as blocks) represented how the track was allocated. . . . Blue Indicates track work is occurring . . . White Track is currently unallocated.”), 10 (“Figure 3. Active Track Layout”), 53 (“5. **The route will unclear automatically if a train has used it. The color of the track will change back to white.** 6. **To block**

a route for MOW activity, click first on the **‘block’ button at the bottom of the screen. Then click on the part of the track you are giving away.**”) (emphasis added), 6-7, 9, 54-56, 59, ix, 1, Figs. 3, 8; Michalson, ¶170.

f. 30[E] — Transmit Block Signal

Oriol and Masquelier teach, 30[E] or “responsive to receiving the signal that a new block can be established, transmit a block signal to the corresponding interlock associated with the at least one selected track section, to place a block on the at least one selected track section.”

Based on receiving a signal that a new block can be established (*see* 30[C]-[D]), Oriol and Masquelier transmit a block signal to the corresponding interlock of the selected track section to block the track. *See* 20[B]-[C]; EX1005, 11, Fig. 1, Table 2; Michalson, ¶172.

Additionally, the RE’115 Patent admits it was known to a POSITA to determine a track is available by operating (or selecting) a “control console” based on signals received at centralized control and further block the selected track by controlling the interlock signal. *See* Section VIII.A; EX1001, 1:39-2:17; Michalson, ¶¶38-39, 173.

Another reference also demonstrates it was known to a POSTIA to receive a signal that a new block could be established and block a track by transmitting a block signal to an interlock. EX1026, 8 (“[A] color-coded track display with text to display

the current track state. . . . The color of individual track segments (referred to as blocks) represented how the track was allocated. . . . Blue Indicates track work is occurring . . . White Track is currently unallocated.”), 53 (“5. The route will unclear automatically if a train has used it. The color of the track will change back to white. 6. To block a route for MOW activity, click first on the ‘block’ button at the bottom of the screen. Then click on the part of the track you are giving away. You have to repeat the process if you want to block more track.”), 6-7, 9-10, 54-56, 59, ix, 1, Figs. 3, 8; Michalson, ¶174.

g. 30[F] — Generate a Secret Code

See 20[D]; Michalson, ¶175.

h. 30[G] — Transmit a Secret Code

See 20[Pre], [D]-[E]; Michalson, ¶176.

4. Claim 31

a. 31[Pre] — Method

See 20[Pre]; Michalson, ¶177.

b. 31[A] — Receive Track Selection

See 20[Pre]-[B]; Michalson, ¶178.

c. 31[B] — Determine Track Selection Has Block

See 20[B]-[C], 30[C]; Michalson, ¶179.

d. 31[C] — Receive Signal New Block Established

See 20[B]-[C], 30[D]; Michalson, ¶180.

e. 31[D] — Transmit Block Signal

See 20[A]-[C], 30[E]; Michalson, ¶181.

f. 31[E] — Generate a Secret Code

See 20[D]; Michalson, ¶182.

g. 31[F] — Transmit a Secret Code

See 20[Pre], [D]-[E]; Michalson, ¶183.

5. Dependent Claims

a. Claims 21/32 — Store the Secret Code

Oriol and Masquelier teach claims 21/32 because the railway control apparatus stores the Form D number or secret code. EX1004, 14, 31 (database stores “out of service track under Form D”), 39 (“Form Ds . . . are . . . stored in the machine running the web server. . . . The roadway worker . . . will only tell the PDA they want to retrieve a specific Form D number”), 36-38, Figs. A-1, A-3; *see* 20[D]; Michalson, ¶184.

b. Claims 22/33 — Release Track Block Based on Same Secret Code

Oriol and Masquelier teach claims 22/33. Michalson, ¶¶185-198.

Neither the claims, nor the specification, describes the second secret code, including its contents or how it is created.

Oriol describes that “[o]nce authorization for track use is granted to a roadway crew and the track is blocked, the dispatcher has delegated authority over that track to the roadway crew.” EX1004, 6; EX1005, 11 (“When the dispatcher gives track authority to a work crew, the dispatcher temporarily loses control over that section of track.”)

The “worker can retrieve a list of Form Ds . . . under his/her authority . . . [and] [f]ollowing the link[] ‘Cancel/Fulfill’ . . . the roadway worker is able to give some track under his authority back to the dispatcher.” EX1004, 36, 37 (“Retrieve list of active Form Ds: Used whenever a roadway worker has finished their job or wants to cancel or fulfill a Form D and is giving the track back to the dispatcher.”) (emphasis in original), 39, 31, Fig. A-1; Michalson, ¶¶186-188.

Oriol teaches that the railway control apparatus removes the track block only after determining the same (or second) secret code matches the stored code, particularly “**Cancel/Fulfill Form D . . . You own these form Ds 0003, NorthEast Corridor . . . Cancel/Fulfill . . . Form D Cancel . . . YOU ARE NOT UNDER DISPATCHER PROTECTION NorthEast Corridor dispatcher has received your request and the form D # 0003 has been cancelled.**” EX1004, Fig. A-1 (emphasis added), 37 (“Cancel/fulfill Form D: Works together with the previous request. This is the step to actually cancel or fulfill the Form D.”) (emphasis in original); see 21/32; Michalson, ¶189.

Thus, a specific form D “0003” is transmitted to the railway control apparatus to unblock the track as shown by the same Form D number, “form D# 0003,” being cancelled.

Additionally, Oriol and Masquelier would not release the track block based on any returned code as that would jeopardize the worker’s safety. Michalson, ¶¶ 190-191.

It would have been obvious to a POSITA to verify a stored code with the returned code and only release the track block if the codes match (or maintain the block if they do not match). Michalson, ¶192. A POSITA would have a reasonable expectation of success given it is a straightforward comparison of secret codes. Michalson, ¶193.

If the codes match, the dispatcher using the track display would unblock the track by transmitting a signal to the interlock. EX1005, 10-12 (“Each dispatcher has a workstation to control the switches and signals. . . . Once the job is complete, the roadway worker returns control of the track to the dispatcher, who releases the track for other uses.”), Fig. 1, Table 2; EX1004, 36, 6; Michalson, ¶194.

It is also known to a POSITA to transmit a signal to the corresponding railway interlocks to unblock the track. *See* Section VIII.A; EX1001, 1:39-2:17; EX1026, ix, 1, 6-10, 53-56, 59, Figs. 3, 8; Michalson, ¶195.

To the extent it is argued that the code should be entered, a POSITA would have been motivated to modify Oriol and Masquelier to enter the removal code because it would provide confirmation before the track is unblocked and ensure the dispatcher is alert to the information provided, such as unblocking the track. Michalson, ¶196.

A POSITA would have had a reasonable expectation of success because Oriol teaches a centralized dispatcher user interface and related software. *See* 20[Pre]-[A]; Michalson, ¶197.

Additionally, it was a known to a POSITA to enter a received code for confirming a person was paying attention to allow train movement. EX1021, 4:10-17, 4:48-65, Abstract, 5:24-30, 5:59-65, claim 1, Fig. 4; Michalson, ¶198.

c. Claim 23/34 — Maintain Track Block Based on Different Returned Secret Code

Oriol and Masquelier teach claims 23/34 because the block will remain in place if the railroad control apparatus receives a different code from the stored code. Michalson, ¶199

As discussed in claims 22/33, the block is released if the returned code matches the stored code and would not remove the block if the codes do not. *Id.*, ¶200.

Otherwise, a POSITA would have been motivated to modify Oriol and Masquelier such that the block would be maintained if the stored and received code do not match. *Id.*, ¶201. A POSITA would have a reasonable expectation of success given it is a straightforward comparison of secret codes. *Id.*, ¶202.

d. Claim 24 — Transmit Code by Message or Email

Oriol and Masquelier teach claim 24. Michalson, ¶¶203-210.

Oriol and Masquelier's railway control apparatus generates the Form D number or secret code (*see* 20[D]) and transmits that code to the worker's PDA or electronic contact address. *See* 20[D]-[E]. The worker's PDA interface displays a message, *e.g.*, embedded link of "Cancel/Fulfill" in Fig. A-1. EX1004, Figs. A-1, A-3.

A POSITA would have been motivated to modify Oriol and Masquelier with a reasonable expectation of success to transmit the, *e.g.*, embedded link of "Cancel/Fulfill" in Fig. A-1, in an email or text message. Mr. Pirtle admits that mobile phones, text messaging, and email were conventional before the Priority Date. *See* Section V.B, VIII.A; EX1023, 2, 8 (¶¶ 5, 7), 15-16; Michalson, ¶¶204-206. This indicates these known communication methods could be applied to railway systems.

There would have been a motivation to combine with a reasonable expectation of success to transmit the code in an email or text message to provide a more

accessible form. Michalson, ¶¶207-210. Masquelier specifically updated Oriol's PDA with the "Qualcomm® pdQ™ Smartphone 800" for text messaging relating to work authorization. EX1005, 15, 21 ("The current hardware platform can use SMS to send and receive messages. . . • Sending a message by clicking on a roadway worker on the tracking display • Sending an unstructured message to anybody at anytime."), 27, 41, 63.

Also, workers "were asked if they would use the PDA in their jobs . . . [and] [i]nterest was high for both requesting information and work authorizations." EX1004, 25, 16, 13.

e. Claim 25 — Use a Remote User Terminal

Oriol and Masquelier teach claim 25 because the remote user terminal could be a mobile phone, smartphone, or a personal digital assistant. *See* 24, 20[A], [D]-[E]; Michalson, ¶¶211-214.

Further, Masquelier teaches a mobile device and software application (menu) to request and cancel work authorization as shown below:



Figure 2. Qualcomm® pdQ™
Smartphone

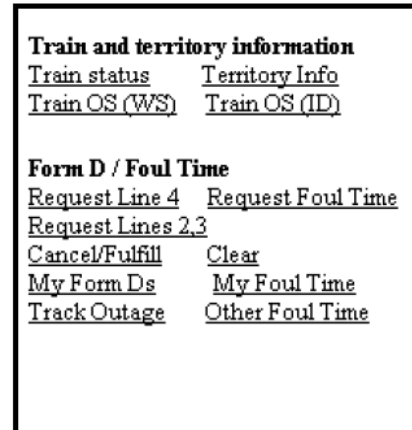


Figure 5. Main Menu

EX1005, Figs. 2, 5; *see id.*, 15 (“Qualcomm® pdQ™ Smartphone 800” for text messaging relating to work authorization), 21, 27, 41, 63.

Also, the railway control apparatus’ processor executes instructions which transmit the secret code to such device(s). *See* 24, 20[A]-[B], [D]-[E].

Further, Mr. Pirtle admitted that mobile phones were conventional before the Priority Date. *See* Section V.B, VIII.A; EX1023, 2, 8 (¶¶ 5, 7), 15-16; Michalson, ¶¶212-214.

f. Claim 26 — Transmit Secret Code via Network Interface

Oriol and Masquelier teach claim 26. *See* 20[Pre]-[A], [D]-[E]; EX1004, 6, 31, 38, Figs. 2, A-3; Michalson, ¶215.

g. Claim 27/35 — Only Receive Secret Code

Oriol and Masquelier teach claims 27/35 because only the railway traffic control apparatus and the user terminal receive the secret release code. *See* 20[D], 22/33; Michalson, ¶216.

h. Claim 28 — Generate Random Secret Code

Oriol and Masquelier teach claim 28. Michalson, ¶¶217-220.

A POSITA would have been motivated to modify Oriol and Masquelier to generate the Form D number by random process because the Form D number randomized would be more difficult to decipher. Michalson, ¶218.

Also, a POSITA would have had a reasonable expectation of success because Oriol and Masquelier use encryption which indicates they have the technology for generating a random process. EX1004, 57-58; Michalson, ¶219.

Further, it was known to a POSITA to generate a code by a random process. EX1021, 4:8-9 (“Software within the LCU 40 could be used to generate a random number as the basis for the unique code.”); Michalson, ¶220.

i. Claims 29/36 — Retrieve Electronic Contact Address

Oriol and Masquelier teach claims 29, 36. Michalson, ¶¶221-226.

Oriol teaches a rail personnel database registering an electronic contact address given Oriol’s “database includes . . . Roadway workers (MWForemen.txt) . . . [with] information **about registered PDAs and their owner.**” EX1004, 39

(emphasis added), 57 (“Each Palm VII device had a built in device ID . . . [and this] device ID was used to identify which roadway worker was sending each request.”), 38; Michalson, ¶222.

Additionally, because the communication is over the Internet, it would have been known to a POSITA that there would be, *e.g.*, an IP address (as well as a MAC address), for the PDA and that some, or all of, that information would be stored in the Oriol database for such Internet communication. Michalson, ¶223.

To the extent it is argued that the claimed database must be a standalone database, that would have been an obvious modification because separating data in separate databases is simply a design choice. *Id.*, ¶224.

Oriol teaches retrieving a specific railway worker’s data and determining an electronic address of the remote user terminal to send the secret code given that the Form D number is “sent to the roadway worker who requested it” and the worker’s PDA device ID is registered in the railway control apparatus database. EX1004, 38, 39, 57, Fig. A-3; Michalson, ¶225.

The railway control apparatus generating the secret code and transmitting the code to the electronic contact address of the worker’s PDA is shown in Figure A-3 below, particularly “**Form D Line 4 Request . . . North East Corridor dispatcher has received your request . . . Please confirm Form D 0001 . . . Delivered to: Oriol . . . 2 track out of service**” EX1004, Fig. A-3 (emphasis added), A-5

(dispatcher interface: “**Form D 0003 is Requested** . . . Form D #: 0003 Delivered to: Oriol . . . track out of service”) (emphasis in original), Fig. A-1 (“You own these form Ds 0003, NorthEast Corridor . . . NorthEast Corridor dispatcher has received your request and the form D # 0003 has been cancelled.”); Michalson, ¶226.

B. Ground 2: Claims 20-36 Are Obvious Over Oriol, Masquelier, and Wise

1. Motivation to Combine; Reasonable Expectation of Success

A POSITA would have been motivated to combine Oriol, Masquelier, and Wise and had a reasonable expectation of success given the references are in the field of, and solve the problem of, railway control for safe maintenance work. EX1004, Abstract, 29, 37, Fig. 2; EX1005, Abstract, 3, 10-12, 16, Fig. 4; EX1006, title, Abstract, 1:3-7, 12:6-15; Michalson, ¶227.

There also would have been a motivation to combine and a reasonable expectation of success given that the references use central railway traffic control. EX1004, Abstract, 1, 6, 29, 37-38, Figs. A-1-A4, 2, 4; EX1005, Abstract, ix, 3, 5, 10-12, 16, Figs. 1, 4, Table 2; EX1006, Abstract, 7:33-8:2, 9:23-28, 12:6-15, 24:19-26, 27:22-28:4, claims 1, 16, 17, Figs. 2, 5H, 10; Michalson, ¶228.

Thus, a POSITA would have been motivated and had a reasonable expectation of success to modify Oriol and Masquelier with Wise, including to block the track and thereafter generate a secret code.

For instance, a POSITA would have been motivated to modify Oriol and Masquelier with Wise's first blocking the track and thereafter generating a unique access code (*e.g.*, SCN), as the secret code. Michalson, ¶¶229-230; *see* Section VIII.D. This modification could enhance safety and security as the central control system would only generate the code once the block has been implemented as otherwise the dispatcher and/or third-party could unsafely or incorrectly use the code before the track is blocked. Michalson, ¶231.

Moreover, because Wise's code would be separate from the Form D number, it would be more difficult for a third-party to decipher and potentially unsafely unblock the track. Michalson, ¶232. Thus, Wise's code could provide another layer of security over the Form D number because it acts as authority to enter the track for maintenance. Michalson, ¶233; EX1006, Abstract, 12:6-15, claims 1, 15-17, 23, 24:19-26, 26:14-23, Fig. 5H.

A POSITA would have a reasonable expectation of success because Oriol and Masquelier's railway control apparatus has existing hardware and software (for the Form D number) such that they could visually block the track and generate and transmit Wise's code. *See* Ground 1, 20[B]-[E]; Michalson, ¶234. Indeed, Oriol notes that "[t]he system is designed to be highly configurable," which would further enable a POSITA to make modifications. EX1004, 41. Further, Oriol's railway control apparatus generates and transmits a Form D number and other information

to the worker's device; thus, generating and transmitting Wise's access code would require minimal changes. EX1004, 38, Fig. A-3; Michalson, ¶235.

2. Independent Claims

Oriol, Masquelier, and Wise render obvious independent claims 20, 30, and 31. Michalson, ¶¶236-240.

After blocking the track, Oriol and Masquelier would also generate and transmit Wise's unique access code such as an SCN to the worker. Michalson, ¶237.

Wise teaches that, after the worker requests a safety measure (green zone), the central control system blocks the track using signal lights and thereafter generates an access code, *e.g.*, SCN, which is provided to the worker. *See* Section VIII.D; EX1006, Fig. 5H (“S553 Press the traffic-light icon on the toolbar & the SCN is automatically generated . . . Pass number to COSS [controller of site safety]”), 7:33-8:2 (“[G]reen zone refers to a location where there is a blockage such a[s] traffic lights”), claims 1, 16 (“unique access code is provided to said user”), 17, 30:20-24 (“operators . . . may take steps . . . by controlling traffic lights in the region, controlling the speed of trains or preventing trains from running.”), 29:32-30:3, 12:6-15, 24:19-26, Abstract; Michalson, ¶238.

Wise teaches that the access code transmitted to the worker provides authority to enter a track for maintenance. EX1006, 12:6-15 (SCN “authorises/permits the user . . . to carry out work and access a work site. Alternatively the user themselves may

not enter the work site.”), claims 1, 15-17, 23, 24:19-26, 26:14-23, 16:16-19, Abstract, Fig. 5H. This code would be considered a secret code because without the code a worker cannot access the worksite and only that worker has access to the code. *Id.*; *id.*, 31:33-32:3; Michalson, ¶¶239-240.

3. Dependent Claims

a. Claims 21/32 — Store the Secret Code

Oriol, Masquelier, and Wise teach claims 21/32. *See* Ground 1, 21/32; Michalson, ¶¶241-242.

Wise stores the code as part of the permitting a worker to access the worksite. EX1006, 28:6-12 (“As various jobs are called in from various users and safety check numbers providing those users with permission to access a work site to carry out a service are issued, details of these jobs will be entered in a database at the remote station.”), 31:2-6, 20:4-21, Figs. 2, 5H, 10; Michalson, ¶242.

b. Claims 22/33 — Release Track Block Based on Same Secret Code

Oriol, Masquelier, and Wise teach claims 22/33. *See* Ground 1, 22/33; Michalson, ¶¶243-250.

Wise teaches that when the work is completed, it would transmit the access code to the railway control apparatus. EX1006, 25:4-9 (transmits the same secret code or “SCN number . . . previously . . . allocated to the job” to the central control

system), Fig. 5H (“Ask for SCN & COSS name, enter Actual Withdrawn time and any relevant comments.”); Michalson, ¶¶244-245. Thereafter, “the bulletin board is updated to indicate that that job has successfully been carried out.” EX1006, 25:10-11.

It was known to a POSITA to enter a received code to ensure the operator is alert to the information provided. EX1021, 4:10-17, 4:48-53, 4:54-65, Abstract, 5:24-30, 5:59-65, claim 1, Fig. 4; Michalson, ¶246.

Given the above, the code would not have been accepted unless compared to the previously stored code. Michalson, ¶247. Otherwise, this would mean Wise’s central control system simply accepts any code to remove a track block, thereby jeopardizing the safety of the workers, which is contrary to the purpose of the code to authorize work. EX1006, 12:6-15, 1:3-7, Title, claims 1, 15-17, 23, 24:19-26, 26:14-23, Fig. 5H; Michalson, ¶248.

A POSITA would have been motivated to modify Oriol and Masquelier with the code entry and verification step above to ensure the track is not improperly unblocked, and there would have been a reasonable expectation of success given the straightforward change. Michalson, ¶249.

Once the codes match, a signal would be transmitted to unblock the track. Ground 1, 22/33; Michalson, ¶250.

c. Claim 23/34 — Maintain Track Block Based on Different Returned Secret Code

Oriol, Masquelier, and Wise teach claims 23/34. *See* Ground 1, 23/34; Michalson, ¶¶251-253.

As discussed in claims 22/33, Wise would only accept a code that matches the stored code to avoid jeopardizing the safety of the workers. Michalson, ¶252. Thus, an unblock signal would not be sent if the codes do not match. Ground 1, 22/33; Michalson, ¶253.

d. Claim 25 — Use a Remote User Terminal

Oriol, Masquelier, and Wise teach claim 25. *See* Ground 1, 25; Michalson, ¶¶255-257.

Wise teaches a “mobile terminal.” EX1006, 9:23-28 (“Figure 2 illustrates the remote access system. The assessor user uses a mobile terminal 20 to call a remote station 21. The remote station and mobile terminal are connected via a wireless communication link 22 base transceiver station 23 and a router illustrated as the internet 24.”), claim 19; Michalson, ¶256.

Also, the railway control apparatus’ processor executes instructions which transmits the secret code to the mobile terminal. EX1006, Fig. 5H (“S553 Press the traffic-light icon on the toolbar & the SCN is automatically generated”), claims 1,

16 (“unique access code is provided to said user”), 17, 12:6-15, 24:19-26, Abstract; Michalson, ¶257.

e. Claim 26 — Transmit Secret Code via Network Interface

Oriol, Masquelier, and Wise teach claim 26. *See* Ground 1, 26; EX1006, Fig. 10, 27:22-28:4, 9:23-28, Fig. 2; *see* 25; Michalson, ¶258.

f. Claim 27/35 — Only Receive Secret Code

Oriol, Masquelier, and Wise teach claims 27/35 because only the railway traffic control apparatus and the user terminal receive the secret code. *See* Ground 1, 27/35; *see* Independent Claims; Michalson, ¶259.

g. Claim 28 — Generate Random Secret Code

Oriol, Masquelier, and Wise teach claim 28. *See* Ground 1, 28. Michalson, ¶¶260-263.

The code in Wise could be generated by a random process given the code can be “unique.” EX1006, 12:6-15 (“a unique check number [SCN] . . . [is] allocated to the qualified person.”), claims 1, 16 (“unique access code is provided to said user”), 17.

Otherwise, a POSITA would have been motivated to modify them because a randomized code could increase security given Wise’s code randomized would be more difficult to decipher to unblock the track. Also, a POSITA would have had a

reasonable expectation of success because Wise has existing technology to generate a unique number. Michalson, ¶¶261-262.

Additionally, generating a random code is known to a POSITA. EX1021, 4:8-9; Michalson, ¶263.

h. Other Dependent Claims

Oriol, Masquelier, and Wise render the other dependent claims obvious for the reasons discussed in Ground 1. *See* Ground 1 and corresponding dependent claims; *see e.g.*, Michalson, ¶¶254, 264.

C. Ground 3: Claims 20-36 Are Obvious Over Oriol, Masquelier, and Pahl

1. Motivation to Combine; Reasonable Expectation of Success

A POSITA would have been motivated to combine Oriol, Masquelier, and Pahl and have a reasonable expectation of success given the references provide railway control. EX1004, Abstract, 1, 6, 29, 37-38, Figs. A-1-A4, 2, 4; EX1005, Abstract, ix, 3, 5, 10-12, 16, Figs. 1, 4, Table 2; EX1020, 1:33-36, 1:63-66, 2:47-60, 3:22-45, 4:9-15, 4:50-59, Abstract, Figs. 1-2, claim 3; Michalson, ¶265.

There also would have been a motivation to combine and a reasonable expectation of success given that the references implement centralized railway traffic control. EX1004, Abstract, 1, 6, 38, 41, Figs. A-1, A-3; EX1005, ix, 3, 5, 10-

12, Fig. 1, Table 2, 72; EX1020, Abstract, 2:47-60, 3:35-45, 4:9-15, Figs. 1-2; Michalson, ¶266.

Thus, a POSITA would have been motivated and had a reasonable expectation of success to modify Oriol and Masquelier with Pahl, including to block the track and then generate the code. Michalson, ¶267. This modification could enhance safety and security as the central control system would only generate the code once the block has been implemented as otherwise the dispatcher and/or third-party could unsafely or incorrectly use the secret code before the track is blocked. Michalson, ¶268.

A POSITA would have a reasonable expectation of success because Oriol and Masquelier could generate a temporary number or other placeholder and then once the safety measure is made effective generate the Form D number to provide greater security and safety as the secret code would not be known until the track is blocked. Michalson, ¶269. Indeed, Oriol and Masquelier's railway control apparatus has existing hardware and software to visually block the track and generate and transmit a Form D number. *See* Ground 1, 20[Pre]-[A], [D]-[E]; Michalson, ¶270.

2. Independent Claims

Oriol, Masquelier, and Pahl teach independent claims 20, 30, and 31. Michalson, ¶¶271-275.

Oriol and Masquelier could block the track and then generate the code (Form D number) as shown by Pahl first implementing a safety measure and then generating a code.

Pahl teaches a central control center system with a computer interface to first control the track safety measure (“movement permission”) and then generate a “checking code.” *See* Section VIII.E; EX1020, 4:9-15 (“[T]he train controller enters an appropriate movement permission in a train computer. This uses the occupancy status of the requested track section to check the permissibility of the movement permission, and calculates a checking code which is specific for that movement permission.”), 3:35-40 (“train control computer to be integrated in the control interface for electronic control systems . . . to control . . . train control sections from one user interface.”), 1:33-36 (“The introduction of the checking code which is specific to the movement permission technically precludes the transmission of a movement permission for which the safety preconditions are not satisfied.”), 1:38-42, 1:63-66, 3:40-45, 1:11-20, Abstract; Michalson, ¶¶272-273.

The Pahl code is secret because it is calculated and only the central control and receiving device can determine the code. EX1020, 2:50-60, 4:7-26, 4:50-59, claim 1, Figs 1-2; Michalson, ¶274.

Pahl further teaches controlling the safety measure (“Permissibility checking of the movement permission” and “Occupation of the assigned track sections”) and

then generating the code (“output of the checking code”). EX1020, Fig. 1; Michalson, ¶275.

3. Dependent Claims

a. Claims 21/32 — Store the Secret Code

Oriol, Masquelier, and Pachl teach claims 21/32. Ground 1, 21/32; EX1020, 2:50-60, 4:7-26, 4:50-59, claim 1, Figs 1-2; Michalson, ¶¶276-277.

b. Claims 22/33 — Release Track Block Based on Same Secret Code

Oriol, Masquelier, and Pachl teach claims 22/33. Ground 1, 22/33. Michalson, ¶¶278-283.

Pachl teaches that a received and entered second secret code at the train center is verified as compared to a stored or calculated code and only if they match is the track or block released. EX1020, 2:50-60 (“If the entered checking code does not match the calculated checking code, the train running message is rejected. . . . [Thus,] it is impossible for an associated track section to be released erroneously.”), 4:50-59 (“train control computer . . . calculates the checking code, and compares this with the manually entered checking code. The track sections to be released are then defined and are entered in the history file. The screen display confirms the correctness of the train running message or, if appropriate, signals a fault state.”), claim 1, Fig. 2; *see* 21/32; Michalson, ¶¶279-280.

A POSITA would have been motivated to modify Oriol and Masquelier with Pahl's entering and verifying the code above to provide another protection mechanism. Michalson, ¶281. There would have been a reasonable expectation of success as Oriol and Masquelier have the hardware and software to store the code and release the track block, so a code entry and comparison could be added. *See* Ground 1, 20[Pre]-[A], 21/32; Michalson, ¶282; EX1021, 4:10-17, 4:48-53, 4:54-65, Abstract, 5:24-30, 5:59-65, claim 1, Fig. 4.

Once the codes match, a signal would be transmitted to unblock the track. Ground 1, 22/33; Michalson, ¶283.

c. Claim 23/34 — Maintain Track Block Based on Different Returned Secret Code

Oriol, Masquelier, and Pahl teach claims 23/34. Ground 1, 23/34; Michalson, ¶¶284-286.

Pahl teaches that a received second secret code at the train center is verified as compared to a stored or calculated code and only if they match is the track or block released. *See* 22/33

Otherwise, the track block is maintained. *Id.*; *see also* EX1020, 2:50-60 (“[i]f the entered checking code does not match the calculated checking code, the train running message is rejected. . . . [Thus,] it is impossible for an associated track section to be released erroneously.”) (emphasis added), 4:50-59 (“train

control computer . . . calculates the checking code, and compares this with the manually entered checking code. The track sections to be released are then defined and are entered in the history file. The screen display confirms the correctness of the train running message or, if appropriate, signals a fault state.”), claim 1, Fig. 2; Michalson, ¶¶285-286.

d. Claim 26 — Transmit Secret Code via Network Interface

Oriol, Masquelier, and Pachl teach claim 26. Ground 1, 26; *see* Independent Claims, 22/33; EX1020, 3:40-45, 4:50-59; Michalson, ¶¶289-290.

e. Claim 27/35 — Only Receive Secret Code

Oriol, Masquelier, and Pachl teach claims 27/35 because only the central control and receiving terminal can determine the secret release code. Ground 1, 27/35; EX1020, 2:50-60, 4:7-26, 4:50-59, claim 1, Figs 1-2; *see* Independent Claims, 21/32, 22/33; Michalson, ¶¶291-292.

f. Other Dependent Claims

Oriol, Masquelier, and Pachl render the other dependent claims obvious for the reasons discussed in Ground 1. *See* Ground 1 and corresponding dependent claims; *see e.g.*, Michalson, ¶¶287-288, 293-294.

X. GRAHAM FACTORS (NO SECONDARY CONSIDERATIONS)

The *Graham* factors were discussed for each ground, including the scope of the prior art, the prior art as compared to the claims, and the level of ordinary skill in the pertinent art. *See* Sections VI, VIII-IX.

For the last factor, secondary considerations, Patent Owner has not shown how any alleged secondary considerations have a nexus to the claim language.

XI. No Basis for Discretionary Denial

A. § 314(a): *Fintiv* and *General Plastic* Factors Favor Institution

The six *Fintiv* factors weigh against discretionary denial. *Apple Inc. v. Fintiv, Inc.*, IPR2020-00019, Paper 11, 9 (PTAB Mar. 20, 2020).

First Factor. This is neutral because Petitioner has not yet moved to stay the Litigation pending IPR, and the PTAB will not speculate on how a district court may rule when a stay is requested. *See Hulu LLC v. SITO Mobile R&D IP, LLC*, IPR2021-00298, Paper 11, at 10-11 (PTAB May 19, 2021).

Second Factor. This favors institution as a Final Written Decision is quite likely before a trial occurs given no trial date is scheduled.

Third Factor. This factor favors institution given the Litigation in its early stage as no discovery, claim construction, and other significant milestones have occurred based on the briefed motion discussed previously.

Fourth Factor. This factor favors institution. Petitioner stipulates that if this RE’115 Patent IPR is instituted, Petitioner will not pursue invalidity grounds in the Litigation of the Challenged Claims on any ground raised, or that could have been reasonably raised in this IPR for the Challenged Claims. *Sotera Wireless, Inc. v. Masimo Corp.*, IPR2020-01019, Paper 12, at 18-19 (PTAB Dec. 1, 2020).

Fifth Factor. This factor should be accorded little weight or is neutral given the Petitioner and Patent Owner are the same parties as in the Litigation.

Sixth Factor. Petitioner’s merits are strong, including supporting Michalson declaration.

Additionally, *Gen. Plastic Indus. Co. v. Canon Kabushiki Kaisha* factors weigh against discretionary denial because there is no prior petition filed on the challenged claims of the RE’115 Patent. *Id.*, IPR2016-01357, Paper 19, at 16-18 (PTAB Sept. 6, 2017).

B. § 325(d): *Advanced Bionics* Favors Institution

Denial under § 325(d) is not warranted under *Advanced Bionics*’ two-factor test. *Advanced Bionics, LLC v. MED-EL Elektromedizinische Geräte GmbH*, IPR2019-01469, Paper 6, at 8 (PTAB Feb. 13, 2020).

The first factor is not met of the “same or substantially the same prior art or arguments previously were presented to the Office” (*id.*) given the specific grounds here were not considered during prosecution of the RE’115 Patent. Thus, there is no

need to analyze the second factor (whether the Office materially erred). *Sony Group Corp. v. MZ Audio Sciences, LLC*, IPR2022-01544, Paper No. 12, at 7 (PTAB Apr. 21, 2023)

XII. CONCLUSION

Petitioner requests *inter partes* review and cancellation of claims 20-36 of RE'115 Patent.

DATED: July 6, 2023

Respectfully submitted,

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CERTIFICATION OF COMPLIANCE UNDER 37 CFR § 42.24(d)

Pursuant to 37 C.F.R. §42.24(d), Petitioner certifies that this Petition for *Inter Partes* Review has total 13,798 words as counted by Microsoft Word, exclusive of the cover page, table of contents, table of authorities, mandatory notices under §42.8, certificate of service, word count, appendix of exhibits or claim listing, and signature block (37 CFR § 42.24(a)). This is within the 14,000 word limit allowed under §42.24(a)(1)(i).

DATED: July 6, 2023

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CERTIFICATE OF SERVICE

I hereby certify that on July 6, 2023 I caused a true and correct copy of the foregoing materials:

- Petition for *Inter Partes* Review of U.S. Patent RE49115
- Exhibits
- Petitioner's Power of Attorney

to be served via overnight delivery on the USPTO Patent Center (PAIR)

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I also caused a courtesy copy of the foregoing materials to be served via email on Railware's counsel of record in the district court litigation:

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