

**UNITED STATES DISTRICT COURT  
SOUTHERN DISTRICT OF NEW YORK**

|                                 |   |                             |
|---------------------------------|---|-----------------------------|
| RAILWARE, INC.,                 | X |                             |
|                                 | : |                             |
| Plaintiff,                      | : | Case No.: 1:24-cv-5537      |
| -against-                       | : | <b>JURY TRIAL REQUESTED</b> |
| NEW JERSEY TRANSIT CORPORATION, | : |                             |
|                                 | : |                             |
| Defendant.                      | : |                             |
|                                 | X |                             |

**COMPLAINT FOR PATENT INFRINGEMENT**

Plaintiff Railware, Inc. (“Railware”) files this complaint against defendant New Jersey Transit Corporation (“NJ Transit” or “Defendant”) and alleges as follows:

**INTRODUCTION**

1. This lawsuit concerns Defendant’s willful and deliberate infringement of Railware’s patents.
  
2. Railware produces one of the premier train traffic control systems in the world, Dispatch X. Among Railware’s suite of tools in or for its train traffic control systems is its patented safety technology, the Enhanced Employee Protection System (“EEPS”). Railware’s EEPS is designed to ensure the safety of track workers that must enter onto tracks to perform maintenance and repairs. During track work, trains are typically blocked from traversing sections of tracks that have railway workers on them. But like all human-controlled systems, these systems are subject to operator error, which can result in serious injury or death to railway workers. To protect against these high stakes for railway workers, Railware’s EEPS forestalls errant train blocking, by placing the authority to lift a block in the hands of the railway worker on the tracks, thereby preventing the railway traffic controller or dispatcher from accidentally

lifting a block and endangering the railway worker(s). Whereas old systems placed the safety of the railway workers in the hands of a geographically remote dispatcher, Railware's EEPS places the safety of the railway workers in the hands of the workers themselves.

3. Furthermore, Railware holds, *inter alia*, a common law trademark in the EEPS and/or "Enhanced Employee Protection System" marks/designations.<sup>1</sup> Railware's first use of these marks in commerce was no later than November 2013. The EEPS mark/designation is also the subject of pending U.S. Trademark Application No. 98436662.

4. Railware's systems, including Railware's EEPS, are used on some of the busiest railroads in the country, including the Metro North Railroad and the Long Island Rail Road. Millions of people rely on Railware's products to transport them safely every day.

#### **PATENTS-IN-SUIT**

5. Railware's owner and inventor of the patents-in-suit, Ross Pirtle, spent years developing the patented technology and EEPS. As a result of his years of effort and investment, Mr. Pirtle was awarded two United States patents: U.S. Pat. No. 9,517,782 (the "'782 patent") (a copy of which is attached as **Exhibit A**) and 9,403,545 (the "'545 patent"). Mr. Pirtle assigned the '782 and '545 patents to Railware. The '545 patent has since been reissued as two reissue patents: (1) U.S. Reissue Pat. No. RE47,835 (the "'835 patent") (a copy of which is attached as **Exhibit B**); and (2) U.S. Reissue Pat. No. RE49,115 (the "'115 patent") (a copy of which is attached as **Exhibit C**) (the '782 patent, the '835 patent, and the '115 patent are collectively referred to herein as the "Asserted Patents").

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<sup>1</sup> Accordingly, any usage of the terms "enhanced employee protection system" or "EEPS" herein that is ascribed to any entity that is not Railware denotes that entity's usage of certain functionalities described in the Asserted Patents. No other entity, beyond Railware, has exclusive rights, title and/or legal ownership in or of the EEPS and/or "Enhanced Employee Protection System" marks/designations or any goodwill associated therewith, as applied to computer software, recorded, for use in railway traffic control systems and apparatus for safety of railway workers and property.

## **PARTIES**

6. Railware is a corporation organized and existing under the laws of New York with its principal place of business located in Hauppauge, NY. Railware is the owner of all right, title, and interest in the Asserted Patents.

7. Railware is the creator of Dispatch X, one of the premier train traffic control systems in the world, used by some of the busiest railroads in the country, including the Metro North Railroad and the Long Island Rail Road. Railware's owner is also the creator of the patented EEPS technology, which saves railway workers' lives by placing the power to lift a block on a section of track in the hands of the railway workers themselves that are on the track.

8. NJ Transit is incorporated in the state of New Jersey. NJ Transit has its principal place of business at 1 Penn Plaza East, Newark, NJ 07105. NJ Transit operates a mass-transit system within New Jersey, as well as parts of New York and Pennsylvania, including in this District.

## **JURISDICTION AND VENUE**

9. This Court has subject matter jurisdiction of the action pursuant to the patent laws of the United States, 35 U.S.C. § 1 *et seq.*, and pursuant to 28 U.S.C. § 1338 because Railware's claims against NJ Transit both arise out of the patent laws of the United States and raise a federal question.

10. This Court has personal jurisdiction over NJ Transit at least because NJ Transit owns and/or operates trains and significant portions of track in a number of states, including in this District, and the allegations of infringement that give rise to this complaint stem from NJ Transits activities in this District.

11. Venue is proper in this judicial district pursuant to 28 U.S.C. § 1400(b) because,

as alleged herein, NJ Transit has committed acts of infringement in this District and NJ Transit maintains a regular and established place of business in this District. Specifically, NJ Transit maintains a regular and established place of business at Penn Station, located at “33rd St. & 7th Ave., directly across from Madison Square Garden, New York, NY 10001.”<sup>2</sup> NJ Transit owns and/or leases space in Penn Station to conduct its business. A substantial percentage of NJ Transit’s business is conducted into and out of New York Penn Station. For instance, over 50,000 rail passengers board NJ Transit trains on average in New York Penn Station on any given weekday,<sup>3</sup> which accounts for over 32% of NJ Transit’s weekday ridership.<sup>4</sup> Five of NJ Transit’s commuter rail lines terminate at New York Penn Station.<sup>5</sup> NJ Transit operates a ticket office in New York Penn Station where it sells train and bus tickets.<sup>6</sup> NJ Transit also operates at least 33 ticket vending machines in New York Penn Station.<sup>7</sup> NJ Transit also has a separate control room in New York Penn Station for dispatching NJ Transit trains.<sup>8</sup> NJ Transit advertises its presence in New York Penn Station to the public.<sup>9</sup>

12. NJ Transit has committed acts of infringement in this District. NJ Transit’s operation of its dispatch system at, at least, New York Penn Station, has infringed and continues to infringe the Asserted Patents in this District as set forth herein. Specifically, NJ Transit has

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<sup>2</sup> *New York Penn Station*, NJTRANSIT, <https://www.njtransit.com/station/new-york-penn-station> (last visited July 22, 2024).

<sup>3</sup> NJ TRANSIT FACTS AT A GLANCE, <https://content.njtransit.com/sites/default/files/FY23%20FACTS%20AT%20A%20GLANCE.pdf> (last visited July 22, 2024).

<sup>4</sup> *See id.*

<sup>5</sup> *New York Penn Station*, NJTRANSIT, <https://www.njtransit.com/station/new-york-penn-station> (last visited July 22, 2024) (identifying the Montclair-Boonton line, Morris & Essex line, Northeast Corridor, North Jersey Coast, and Raritan Valley lines).

<sup>6</sup> *Id.*

<sup>7</sup> *Id.*

<sup>8</sup> *A Look Inside Penn Station’s Control Center*, CBS NEW YORK, <https://www.youtube.com/watch?v=niA1KNZoA08> (last visited July 22, 2024).

<sup>9</sup> *New York Penn Station*, NJTRANSIT, <https://www.njtransit.com/station/new-york-penn-station> (last visited July 22, 2024); *New York City*, NJTRANSIT, <https://www.njtransit.com/destinations/new-york-city> (last visited July 22, 2024).

operated and/or continues to operate one or both of Wabtec's RailwayNet<sup>SM</sup> or Advanced Information Management ("AIM") platform (formerly Collins Aerospace ARINC RailwayNet<sup>SM</sup> or AIM platform) and/or another same or similar systems. Operation of these systems, as implemented by NJ Transit, including in this District, constitutes infringement of the Asserted Patents as set forth herein.

## **FACTUAL ALLEGATIONS**

### **A. Railware and its Technology**

13. Railware provides one of the premier train traffic control systems in the world, Dispatch X. Railware's systems are used by some of the busiest railroads in the country, including to direct trains at Grand Central Station and Penn Station. Railware's systems are the industry standard for traffic control and operations management. Dispatch X provides customers with high-definition graphics and point and click usability. It is scalable for everything from a local control panel on a single interlocking to an entire railroad. Railware supports all railroad protocols so customers can communicate with systems of any complexity in one high resolution, graphic interface.

14. Among the features offered by Railware's systems is its patented EEPS technology. EEPS was developed by Railware's owner and inventor on the Asserted Patents, Ross Pirtle, to save railway workers' lives.

15. Many modern railroads control the movement of trains through a railway network using a centralized system known as centralized traffic control (CTC). CTC systems are used for monitoring, tracking, and operating trains traversing tracks throughout a network. CTCs are controlled by train dispatchers. CTC systems typically include control consoles, that display various pieces of information, such as track conditions, train traffic, and scheduling. Through the control console, the dispatcher controls the movement of trains throughout the railway network.

Movement of trains within a sector of track is typically governed by interlocking signals, which are controlled by the dispatcher via a control console.

16. When railway tracks require maintenance, railway field workers must physically enter the track area to perform the necessary maintenance. Entering an active track area poses grave risks to the railway field workers, who are defenseless against train traffic. Over time, various safety systems were developed, such as alarm systems that alerted railway workers to incoming train traffic, ideally allowing them time to vacate the track area before the train approached. These systems proved inadequate in protecting railway field workers.

17. Other examples of inadequate safety precautions include NORAC's Operating Rules, including the "Form D" control system. NORAC's Operating Rules have existed since the mid-1980's and "Form D" has been an integral part of NORAC's Operating Rules since at least the early 1990's. A "Form D" contains "written authorization(s), restriction(s), or instruction(s) issued by the Dispatcher to specified individuals."<sup>10</sup> These instructions can include a "Form D Line 4," which is used when "removing a track from service."<sup>11</sup> The Operating Rules require the dispatcher to determine that "controlled signals leading to the affected track are in Stop position" prior to issuing a "Form D Line 4."<sup>12</sup> Similarly, prior to releasing a "Form D," the dispatcher ostensibly must take certain actions, including "contact the addressee(s) and state his intent to cancel the Form D . . . , state the Form D number and, date, the cancellation time and date, and his initials, [and] ensure that all cancellation information is repeated [by the addressee] correctly."<sup>13</sup> Despite these protections, human errors and accidents continued to occur, such as those recognized in the Federal Railroad Administration's (FRA) Final Rule and in the Asserted

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<sup>10</sup> NORAC Operating Rules, 6th ed., (Jan. 1, 1997).

<sup>11</sup> *Id.* at 48.

<sup>12</sup> *Id.*

<sup>13</sup> *Id.* at 66.

Patents. Such errors included mistakes such as where “the train dispatchers did not maintain the required blocking devices.”<sup>14</sup>

18. The birth of CTC systems provided a better option. A remote dispatcher could remotely control the tracks used by trains. This remote control enabled the remote dispatcher to “block” sections of track and to temporarily reroute trains away from blocked track sections that were being worked on by railway field workers. But these systems too suffered from certain drawbacks. Specifically, the blocking of track sections was controlled entirely by the remote dispatcher. Human error could and did lead to blocks being removed prematurely or mistakenly by the dispatcher, such as either because the dispatcher falsely believed that the work was complete, or because the dispatcher intended to remove a different block and mistakenly removed a block on a track section where railway field workers were still working.

19. To overcome these limitations, Mr. Pirtle developed patented technology and EEPS. The patented technology and Railware’s EEPS forestalls errant blocking by requiring railway traffic controllers and employees on the ground to cooperate to lift a block. Every time a block is placed, a unique code is generated using, for example, industry leading RSA-authentication and sent to the railway track foreman in the field. In order for that block to be removed, its unique key must be entered by the dispatcher or otherwise appropriately received at the operations control or dispatch center to authorize it. By putting the power to lift a block not solely in the hands of the dispatcher in the operations control center, but also those of railway workers operating under its protection, the patented technology and Railware’s EEPS prevents mistakes and ultimately saves lives, prevents injury and prevents damage to equipment and/or property. EEPS is offered to Railware’s customers and potential customers with Dispatch X.

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<sup>14</sup> Federal Railroad Administration, Railroad Workplace Safety; Roadway Worker Protection Miscellaneous Revisions (RRR) at 75-76 (May 26, 2016).

20. In short, the inventions claimed in the Asserted Patents fundamentally altered the way that railroads approach railway worker safety. The inventions integrated a technological barrier between the train dispatcher and releasing blocks that is controlled by the railway workers that are working on or near tracks. The claimed inventions of the Asserted Patents converted what had previously been a single user, single device process into a multi-device process, with the goal and accomplishment of improving railway worker safety. To accomplish this goal, the Asserted Patents introduced a new architecture and algorithm for placing and releasing blocks that was hitherto unknown. This change requires the restructuring of communications into an unconventional arrangement and introduces new communications to the technological environment never before used in railway safety technology.

21. As a result of Railware's and Mr. Pirtle's hard work and innovations, Railware's software won the Federal Railroad Administration ("FRA") President's Award.

22. Ross Pirtle was awarded two U.S. patents for his inventions: the '782 patent and the '545 patent. The '545 patent has since been reissued as the '835 patent and the '115 patent. The '782 patent, the '835 patent, and the '115 each cover Railware's EEPS technology.

23. The '782 patent includes claims directed to methods and systems for railway control. For example, in claim 5, the claimed method to enhance railway control to protect safety of railway workers on or near railway tracks comprises (1) configuring a mobile user device of a railway field worker to provide a device user interface to display information received via a network from a railway control apparatus and to permit the railway field worker to respond to prompts displayed thereon; (2) providing a terminal user interface on a terminal to permit a terminal user to request the railway control apparatus 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; (3) generating by the railway control apparatus a release code and transmitting the release code to an electronic contact address accessible by the railway field worker via operation of the user interface of the user terminal; and (4) permitting the block to said one or more track sections to be removed by the railway control apparatus only upon receiving the release code from the user terminal in return.

24. The '835 patent includes claims directed to methods and systems for centralized railway control. For example, in claim 19, the claimed method for controlling railway access using a railway traffic control apparatus of a centralized railway control system configured for centralized control of traffic of a centrally controllable railway network including plural railways and a plurality of railway traffic interlocks dispersed in said plural railways constituting said railway network comprises (1) providing a user interface of the railway traffic control apparatus, including a block placing part to place a block on one or more specified track sections in any of said plural railways constituting said railway network that is managed by centralized control operation from the railway traffic control apparatus, the railway traffic control apparatus controlling, by said centralized control operation, one or more interlocks amongst the plurality of railway traffic interlocks dispersed in said plural railways constituting said railway network, to block railway traffic to the specified track sections and thereby to permit a railway field worker to enter the track sections; (2) 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 (3) permitting the block to said one or more track sections to be removed only upon entry of the removal code by said centralized control operation from the railway traffic control apparatus.

25. The '115 patent includes claims directed to methods and systems for centralized railway control. For example, in claim 20, the claimed 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 comprises (1) 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 (2) a memory device storing computer-executable instructions, wherein execution of the computer-executable instructions by the processor causes the railway control apparatus to: (a) receive a selection of at least one track section amongst the plurality of track sections; (b) 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; (c) generate a secret code associated with the at least one selected track section; and (d) transmit the secret code to a remote user terminal.

**B. Regulatory Requirements and Recommendations**

26. On or about December 16, 1996, the Federal Railroad Administration ("FRA") promulgated 49 C.F.R. 214.319, which governs working limits on railroad tracks.

27. On or about November 25, 2014, the FRA issued Safety Advisory 2014-02 "to reemphasize the importance of clear communication and compliance with applicable rules and

procedures regarding roadway worker authority limits on controlled track.”<sup>15</sup> In Safety Advisory 2014-02, the FRA specifically stated “FRA recommends that railroads adopt one or more electronic technologies that may serve to fill the technology gap. Examples of such technology already in use include the following systems: Enhanced Employee Protection System [EEPS]. . . .”<sup>16</sup>

28. The FRA described one embodiment of Railware’s patented EEPS technology as follows:

when an RWIC [roadway worker in charge] secures a track authority, he or she is provided a code via a beeper-like device that is not provided to the dispatcher issuing the authority. The system is designed so that the dispatcher cannot remove the blocking devices that are preventing the clearing of the absolute signal until the RWIC provides him or her with the issued code. Thus, the dispatcher cannot remove the associated on-track safety provided by the authority without the knowledge and agreement of the RWIC.<sup>17</sup>

29. On or about June 10, 2016, the FRA issued a Final Rule amending 49 C.F.R. 214.319. Specifically, 49 C.F.R. 214.319(b) provides:

(b) Each . . . railroad providing regularly scheduled intercity or commuter rail passenger transportation that utilizes controlled track working limits as a form of on-track safety (under §§ 214.321 through 214.323) in signalized territory shall:

(1) By July 1, 2017, evaluate its on-track safety program and identify an appropriate method(s) of providing redundant signal protections for roadway work groups who depend on a train dispatcher or control operator to provide signal protection in establishing controlled track working limits. For purposes of this section, redundant signal protections means risk mitigation measures or safety redundancies adopted to ensure the proper establishment and maintenance of signal protections for controlled track working limits until such working limits are released by the roadway worker in charge. Appropriate redundant protections could include the use of various risk mitigation measures (or a combination of risk mitigation measures) such as technology, training, supervision, or operating-based procedures; or could include use of redundant signal protection, such as shunting, designed to prevent signal system-related incursions into

<sup>15</sup> DOT Roadway Worker Authority Limits Rule, 79 Fed. Reg. 70268 (2014).

<sup>16</sup> *Id.* at 70269.

<sup>17</sup> *Id.*

established controlled track working limits; and

(2) By January 1, 2018, specifically identify, implement, and comply with the method(s) of providing redundant protections in its on-track safety program.

30. NJ Transit is a railroad subject to the provisions of 49 C.F.R. 214.319(b).

31. In the FRA's Section-by-Section Analysis that accompanied the June 10, 2016 rule change, the FRA specifically referred to Safety Advisory 2014-02 and its discussion of Railware's EEPS, concluding "FRA encourages railroads to use new technologies *such as EEPS* as they become available to provide redundant signal protections for roadway work groups and to comply with new paragraph (b)."<sup>18</sup>

32. The "EEPS" system referred to by the FRA is covered by the Asserted Patents.

33. NJ Transit has followed and continues to follow the FRA's recommendations and implemented the patented technology of the Asserted Patents into at least its control center integration systems and/or CTC systems in a manner(s) covered by the claims of the Asserted Patents. NJ Transit deploys its infringing systems, including the patented technology of the Asserted Patents wherever it provides centralized train control systems, including in Pennsylvania.

### **C. NJ Transit's Notice of the Patents**

34. NJ Transit was made aware of its infringement of the '545 patent (of which the '835 patent and the '115 patent are reissues of) at least as of November 22, 2016.

35. More particularly, on November 22, 2016, a representative of Railware reached out to NJ Transit via email stating:

It is our understanding that you are currently using the EEPS track blocking technology at New Jersey Transit developed by Railware. Railware holds a patent on this technology (Patent No: 9,403,545 B2) and has licensed it to others

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<sup>18</sup> DOT Roadway Worker Protection Final Rule, 81 Fed. Reg. 37839, 37861 (emphasis added).

railroads such as Metro North and Long Island Rail Road. For more information about Railware, please go to [www.railware.net](http://www.railware.net).

We are delighted that you see the value in using EEPS at NJ Transit and would like to meet with you to discuss an appropriate licensing arrangement.

I look forward to hearing from you.

36. A representative of Railware followed up on this communication once more in December 2016.

37. On December 5, 2016, NJ Transit responded to Railware's emails that they had received these emails.

38. The '782 patent, which is a continuation of the '545 patent issued on December 13, 2016. The application that would issue as the '782 patent received a Notice of Allowance on August 5, 2016, and published on September 29, 2016. Given the recent correspondence between Railware and NJ Transit regarding the parent '545 patent, NJ Transit knew or should have known and received notice of the '782 patent at least as of December 13, 2016.

39. On January 11, 2017, NJ Transit further responded to Railware's emails providing contact information for an individual with whom Railware may continue the discussion.

40. Accordingly, NJ Transit has had actual knowledge of its infringement of the '545 patent (of which the '835 patent and the '115 patent are reissues of) since at least November 22, 2016, and of its infringement of the '782 patent at least as of December 13, 2016.

41. Further, assertion of infringement of only method claims of a patent does not implicate the Patent Act's marking provision (35 U.S.C. § 287). However, to the extent the marking statute does apply, since at least October 21, 2020, Railware has included the patent numbers of the Asserted Patents (1) in the header bar of Railware's Dispatch X system; and/or

(2) on Railware’s freely and publicly available website.<sup>19</sup> Accordingly, NJ Transit has had constructive notice and knowledge of the Asserted Patents since at least October 21, 2020.

42. Additionally, NJ transit operates out of New York Penn Station alongside National Railroad Passenger Corporation d/b/a Amtrak (“Amtrak”) and Long Island Rail Road, both of which use EEPS technology or EEPS-like systems. NJ Transit is familiar with the systems used by Amtrak and Long Island Rail Road because these railroads share tracks into and out of New York Penn Station.

43. Moreover, considering the discussions with Railware regarding NJ Transit’s infringing use of Railware’s patents and Railware’s “EEPS track blocking technology” as early as November 22, 2016, NJ Transit knew or should have known and received notice of Railware’s patents that reissued from the ’545 patent (*i.e.*, the ’835 patent and the ’115 patent) on at least their respective dates of issuance: February 4, 2020 for the ’835 patent, and June 28, 2022 for the ’115 patent. Further, NJ Transit knew or should have known and received notice of the ’782 patent on at least its issue date: December 13, 2016.

44. Moreover, after its communications with NJ Transit discussed above, Railware filed suit against Amtrak for infringement of the Asserted Patents in relation to Amtrak’s implementation of the “EEPS” system that it copied from NJ Transit and Metro North. Accordingly, NJ Transit also had actual or constructive knowledge of the Asserted Patents at least as of June 15, 2022 (the filing date of the complaint against Amtrak). *See Railware Inc. v. National Railroad Passenger Corporation d/b/a Amtrak*, No. 1:22-cv-5013 (SDNY 2022).

**D. NJ Transit’s Infringement with the RailwayNet<sup>SM</sup> system/AIM system and/or Any Same or Similar Systems or Methods**

45. NJ Transit and/or its agents operate one or more control centers, including at least

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<sup>19</sup> *EEPS with SURELOCK*, RAILWARE, <http://railware.net/eeeps.html> (last visited July 22, 2024).

one in this District at New York Penn Station in Manhattan, NY, more particularly at New York Penn Station Central Control (“PSCC”) located therein.<sup>20</sup> NJ Transit and/or its agents also operate a control center at the New Jersey Transit Meadows Maintenance Complex, 5710 Newark-Jersey City Tpke, Kearny, NJ 07032 (“Rail Operations Center” or “ROC”).<sup>21</sup> NJ Transit’s control centers “control[] train movements, signals and switches and monitors the location and status of every locomotive throughout the system.”<sup>22</sup> The train dispatchers operate those switches and display signals to “remotely dispatch and monitor train movements,”<sup>23</sup> as well as to place and remove “the blocking devices providing [track] protection [to employees].”<sup>24</sup> NJ Transit maintains “more than 500 miles of track, 166 rail stations, 16 rail yards” and provides almost 90 million passenger trips a year.”<sup>25</sup>

46. NJ Transit has used and/or currently uses a centralized train control system known as RailwayNet<sup>SM</sup> and/or AIM, which was formerly provided by Rockwell Collins, Inc. – a

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*A Look Inside Penn Station’s Control Center*, CBS NEW YORK, <https://www.youtube.com/watch?v=niA1KNZoA08> (last visited July 22, 2024); *Penn Station Central Control Tour*, ERA, <https://erausa.org/pdf/regional-trips/2016/2016-12-17-penn-station-central-control-tour.pdf> (last visited July 22, 2024); *Penn Station Control Center keeps trains running through summer repairs*, ABC7NC (July 25, 2017), <https://abc7ny.com/penn-station-control-center-repairs-dispatchers-commuting/2249416/> (“Penn Station is a major terminal for . . . New Jersey Transit . . .”)

<sup>21</sup> *Positive Train Control: NJ Transit Celebrates Certification of Positive Train Control System*, NJTRANSIT, <https://www.njtransit.com/ptc> (last visited July 22, 2024) (“The Rail Operations Center (ROC) in Kearny controls train movements . . .”); *NJ Transit Rail Operations Celebrates 40 Years of Service*, NJTRANSIT, <https://www.njtransit.com/press-releases/nj-transit-rail-operations-celebrates-40-years-service> (last visited July 22, 2024) (“NJ TRANSIT also centralized its maintenance and train dispatching functions in Kearny with the opening of the Meadows Maintenance Complex in 1987 and the Rail Operations Center in 2003.”)

<sup>22</sup> *Positive Train Control: NJ Transit Celebrates Certification of Positive Train Control System*, NJTRANSIT, <https://www.njtransit.com/ptc> (last visited July 22, 2024).

<sup>23</sup> *New Jersey Transit*, ROSS & BARUZZINI, <https://www.rossbar.com/projects/new-jersey-transit/> (last visited July 22, 2024); *Job Posting: Supervisor, Train Operations*, NJTRANSIT, [https://njtransit.my.salesforce-sites.com/FCMS\\_\\_CMSLayout?jobIds=a295x000008DUcqaAG&page=CorporateDetailPage&sessionId=&jobSite=Railroad&p=Candidate&ApplPage=Corporate&pageTitle=Supervisor%2C%20Train%20Operations](https://njtransit.my.salesforce-sites.com/FCMS__CMSLayout?jobIds=a295x000008DUcqaAG&page=CorporateDetailPage&sessionId=&jobSite=Railroad&p=Candidate&ApplPage=Corporate&pageTitle=Supervisor%2C%20Train%20Operations) (last visited July 22, 2024).

<sup>24</sup> NEW DEFINITION –ENHANCED EMPLOYEE PROTECTION SYSTEM (EEPS) (April 5, 2016), <https://utulocal60.com/testing/wp-content/uploads/2016/03/Text-for-foul-time.pdf> [hereinafter referred to as “NJT EEPS Guidance Sheet”].

<sup>25</sup> *Railroad Careers: Outstanding Careers with the Railroad*, NJTRANSIT, <https://www.njtransit.com/careers/railroad-careers/> (last visited July 22, 2024).

subsidiary of Raytheon Technology that did business as “Collins Aerospace” – that has since been acquired by Wabtec Corporation (“Wabtec”), or other same or similar systems.<sup>26</sup>

47. ARINC Incorporated (“ARINC”) was the original creator of what would become the RailwayNet<sup>SM</sup> and/or AIM systems. In 2013, Rockwell Collins acquired ARINC. In 2018, United Technologies acquired Rockwell Collins. In 2020, Raytheon Technologies merged with United Technologies, and rebranded Rockwell Collins/ARINC as Collins Aerospace. In 2022, Collins Aerospace’s ARINC rail solutions business segment was acquired by Wabtec.<sup>27</sup> This acquisition included RailwayNet<sup>SM</sup> and AIM systems.<sup>28</sup>

48. ARINC provided “fully integrated train control and Positive Train Control (PTC), control center integration and customer information systems, [] cybersecurity and life-cycle management” services to “regional, short line, inter-city, commuter, subway and light rail

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<sup>26</sup> *Advanced Information Management (AIM) Rail Dispatch*, WABTEC, <https://www.wabteccorp.com/digital-intelligence/signaling-and-train-control/dispatch/advanced-information-management-aim-rail-dispatch> (last visited July 22, 2024) (describing AIM); *RailwayNet Positive Train Control Communication Solution*, WABTEC, <https://www.wabteccorp.com/digital-intelligence/signaling-and-train-control/communications/railwaynet-positive-train-control-communication-solution> (last visited July 22, 2024) (describing RailwayNet<sup>SM</sup>); see <https://www.masstransitmag.com/rail/railroad-signals-ptc-control-systems-and-products/press-release/21117417/collins-aerospaces-arinc-rail-solutions-to-deliver-big-data-capabilities-to-nj-transit> (“Through ARINC’s Advanced Information Management (AIM®) rail system, NJ Transit will receive a modern platform design to meet the monitoring and control requirements of its commuter rail operations.”); *ARINC Wins Centralized Electrification and Traffic Control System for Amtrak’s Northeast Corridor Operations*, Press Release (May 7, 2008) (available at [https://cisp.cachefly.net/assets/articles/attachments/13192\\_arinc.pdf](https://cisp.cachefly.net/assets/articles/attachments/13192_arinc.pdf)) (“In addition to Amtrak trains, the system will be used to dispatch . . . commuter trains from . . . New Jersey Transit. . . .”); see also *Meeting Minutes re: Contract Op39622521, Metro Exposition Scada Integration*, Los Angeles County Transportation Authority: Operations Committee (July 15, 2010), Attachment A-1 (available at [https://boardarchives.metro.net/Items/2010/07\\_July/20100722RBMItem27.pdf](https://boardarchives.metro.net/Items/2010/07_July/20100722RBMItem27.pdf)) (“ARINC has provided systems engineering solutions based on their proposed Advanced Information Management (AIM) platform for the following rail transportation agencies: . . . New Jersey Transit[] . . .”)

<sup>27</sup> *Wabtec Acquires Collins Aerospace’s ARINC Rail Solutions Business to Extend Rail Optimization Portfolio*, WABTEC (June 16, 2022), <https://www.wabteccorp.com/newsroom/press-releases/wabtec-acquires-collins-aerospace-s-arinc-rail-solutions-business-to-extend-rail-optimization-portfolio>.

<sup>28</sup> *Advanced Information Management (AIM) Rail Dispatch*, WABTEC, <https://www.wabteccorp.com/digital-intelligence/signaling-and-train-control/dispatch/advanced-information-management-aim-rail-dispatch> (last visited July 22, 2024) (describing AIM); *RailwayNet Positive Train Control Communication Solution*, WABTEC, <https://www.wabteccorp.com/digital-intelligence/signaling-and-train-control/communications/railwaynet-positive-train-control-communication-solution> (last visited July 22, 2024) (describing RailwayNet<sup>SM</sup>).

systems across the United States and Canada.”<sup>29</sup>

49. Likewise, Wabtec advertises that it provides, *inter alia*, “advanced train control solutions that combine electronic train management, virtual block signaling, satellite communication, and precise positioning into a comprehensive train control solution” and “integrated services including construction, material, engineering, system integration, track services, and turnkey solutions for CTC, CBTC, and PTC systems.”<sup>30</sup>

50. Wabtec offers a number of products and/or systems that provide, either alone or in combination with other products, infringing functionality, including, but not limited to RailwayNet<sup>SM</sup> and/or AIM.

51. NJ Transit’s implementation of Wabtec’s software and/or hardware systems or any same or similar systems or methods throughout its rail networks infringe the Asserted Patents.

52. For example, with respect to the ’782 patent, NJ Transit’s software and/or hardware systems practice the claimed method for (1) configuring a mobile user device of a railway field worker to provide a device user interface to display information received via a network from a railway control apparatus and to permit the railway field worker to respond to prompts displayed thereon; (2) providing a terminal user interface on a terminal to permit a terminal user of the terminal to request the railway control apparatus 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; (3) generating by the railway control apparatus a

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<sup>29</sup> *Wabtec Acquires Collins Aerospace’s ARINC Rail Solutions Business to Extend Rail Optimization Portfolio*, WABTEC (June 16, 2022), <https://www.wabteccorp.com/newsroom/press-releases/wabtec-acquires-collins-aerospace-s-arinc-rail-solutions-business-to-extend-rail-optimization-portfolio>.

<sup>30</sup> *Signaling and Train Control*, WABTEC, <https://www.wabteccorp.com/digital-intelligence/signaling-and-train-control> (last visited July 22, 2024).

release code and transmitting the release code to an electronic contact address accessible by the railway field worker via operation of the user interface of the user terminal; and (4) permitting the block to said one or more track sections to be removed by the railway control apparatus only upon receiving the release code from the user terminal in return, such that they infringe one or more claims of the '782 patent.

53. As a further example, with respect to the '835 patent, NJ Transit's software and/or hardware systems practice the claimed method for controlling railway access using a railway traffic control apparatus of a centralized railway control system configured for centralized control of traffic of a centrally controllable railway network including plural railways and a plurality of railway traffic interlocks dispersed in said plural railways constituting said railway network centralized railway control system including (1) providing a user interface of the railway traffic control apparatus, including a block placing part to place a block on one or more specified track sections in any of said plural railways constituting said railway network that is managed by centralized control operation from the railway traffic control apparatus, the railway traffic control apparatus controlling, by said centralized control operation, one or more interlocks amongst the plurality of railway traffic interlocks dispersed in said plural railways constituting said railway network, to block railway traffic to the specified track sections and thereby to permit a railway field worker to enter the track; (2) 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 (3) permitting the block to said one or more track sections to be removed only upon entry of the removal code by said centralized control operation from the railway traffic

control apparatus, such that they infringe one or more claims of the '835 patent.

54. As a further example, with respect to the '115 patent, NJ Transit's software and/or hardware systems practice the claimed 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 comprises (1) 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 (2) a memory device storing computer-executable instructions, wherein execution of the computer-executable instructions by the processor causes the railway control apparatus to: (a) receive a selection of at least one track section amongst the plurality of track sections; (b) 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; (c) generate a secret code associated with the at least one selected track section; and (d) transmit the secret code to a remote user terminal, such that they infringe one or more claims of the '115 patent.

55. NJ Transit's implementation of the RailwayNet<sup>SM</sup> system/AIM system and/or other same or similar system includes an enhanced employee protection functionality, which NJ Transit refers to internally as "Enhanced Employee Protection System (EEPS)."<sup>31</sup> Specifically,

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<sup>31</sup> <https://utulocal60.com/testing/wp-content/uploads/2016/03/Text-for-foul-time.pdf>

NJ Transit describes its enhanced employee protection functionality as follows:

**Enhanced Employee Protection System (EEPS)**

The Enhanced Employee Protection System (EEPS) is an electronic means of providing track protection to employees along the right of way. Prior to taking a track out of service or issuing foul time, the employee requesting to do so must possess a company issued cell phone. Through their company cell phone, the employee will be given a four digit PIN (EEPS code). When ready to relinquish the out of service limits or foul time, the protected employee must first provide the Dispatcher with their individual EEPS code. Only then will the Dispatcher be able to remove the blocking devices providing protection.

**FIRST CLAIM FOR RELIEF**

**(Infringement of the '782 patent)**

56. Railware repeats and incorporates by reference all prior allegations of this Complaint as if fully set forth herein.
57. Railware is the owner by assignment of all rights, title, and interest in and to the '782 patent.
58. The '782 patent is valid and enforceable.
59. Claim 5 of the '782 patent recites:
- A method to enhance railway control, to protect safety of railway workers on or near railway tracks, said method comprising:
- configuring a mobile user device of a railway field worker to provide a device user interface to display information received via a network from a railway control apparatus and to permit the railway field worker to respond to prompts displayed thereon;
  - providing a terminal user interface on a terminal to permit a terminal user of the terminal request the railway control apparatus 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;
  - generating by the railway control apparatus a release code and transmitting the release code to an electronic contact address accessible by the railway field worker via operation of the user interface of the user terminal; and
  - permitting the block to said one or more track sections to be removed by the railway control apparatus only upon receiving the release code from the user terminal in return.
60. In violation of 35 U.S.C. § 271(a), NJ Transit has infringed and continues to

infringe one or more claims of the '782 patent by making, using, offering for sale, selling, and/or importing in or into the United States a system or method covered by the '782 patent, including, but not limited to, at least NJ Transit's implementation of the RailwayNet<sup>SM</sup> system/AIM system and/or other same or similar system.<sup>32</sup>

61. NJ Transit, through its implementation of the RailwayNet<sup>SM</sup> system/AIM system and/or other same or similar system, infringes at least claim 5 of the '782 patent.

62. NJ Transit's implementation of the RailwayNet<sup>SM</sup> system/AIM system and/or other same or similar system practices a "method to enhance railway control, to protect safety of railway workers on or near railway tracks."

63. NJ Transit's implementation of the RailwayNet<sup>SM</sup> system/AIM system and/or other same or similar system includes an enhanced employee protection system, which protects the safety of railway workers on or near railway tracks.<sup>33</sup>

#### Enhanced Employee Protection System (EEPS)

The Enhanced Employee Protection System (EEPS) is an electronic means of providing track protection to employees along the right of way. Prior to taking a track out of service or issuing foul time, the employee requesting to do so must possess a company issued cell phone. Through their company cell phone, the employee will be given a four digit PIN (EEPS code). When ready to relinquish the out of service limits or foul time, the protected employee must first provide the Dispatcher with their individual EEPS code. Only then will the Dispatcher be able to remove the blocking devices providing protection.

64. NJ Transit owns and/or operates one or more control centers, including the PSCC located at New York Penn Station and the ROC located in Kearny, NJ.<sup>34</sup> Control centers are centralized railway control systems for controlling trains on certain sections of track. NJ Transit implements the RailwayNet<sup>SM</sup> system/AIM system and/or other same or similar system or method as a SaaS and/or IaaS—a software/infrastructure as a service—product that provides

<sup>32</sup> Further investigation may reveal that others of NJ Transit's products and systems also directly or indirectly infringe at least claim 5 and/or other claims of the '782 patent.

<sup>33</sup> NJT EEPS Guidance Sheet at 1.

<sup>34</sup> *Id.*

“full-featured network management and infrastructure, hardware, network, operating systems, and applications for fault, performance, security and configuration management.”<sup>35</sup>

65. The RailwayNet<sup>SM</sup> system is advertised to help facilitate the increases in safety and reliability that train control systems provide.<sup>36</sup>

66. The RailwayNet<sup>SM</sup> system/AIM system and/or other same or similar system or method, which NJ Transit uses, improves rail safety.<sup>37</sup>

67. More particularly, “[t]his system refers to communication-based/processor-based train control technology designed to address a number of rail safety issues, including train-to-train collisions, over-speed derailments, incursions into established work-zone limits, and train movement through a main-line switch that is in an improper position.”<sup>38</sup>

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<sup>35</sup> ROCKWELL COLLINS INC., ARINC RAILWAYNET WHITE PAPER 6 (2016), (available at [https://www.rockwellcollins.com/-/media/Files/Unsecure/Services-And-Support/Information-Management/ARINC-Rail/RailwayNet/ARINC-Rail\\_RailwayNet\\_white-paper.ashx](https://www.rockwellcollins.com/-/media/Files/Unsecure/Services-And-Support/Information-Management/ARINC-Rail/RailwayNet/ARINC-Rail_RailwayNet_white-paper.ashx)) [hereinafter referred to as “White Paper”].

<sup>36</sup> *Amtrak signs nationwide contract for Rockwell Collins’ ARINC RailwayNet<sup>SM</sup> Positive Train Control service*, COLLINS AEROSPACE (Sep. 6, 2017) (available at [https://rockwellcollins.com/-/media/Files/Unsecure/Services-And-Support/Information-Management/ARINC-Rail/RC\\_Amtrak-Press-Release\\_09-06-17.ashx](https://rockwellcollins.com/-/media/Files/Unsecure/Services-And-Support/Information-Management/ARINC-Rail/RC_Amtrak-Press-Release_09-06-17.ashx)); *RailwayNet Positive Train Control Communication Solution*, WABTEC, <https://www.wabteccorp.com/digital-intelligence/signaling-and-train-control/communications/railwaynet-positive-train-control-communication-solution> (last visited July 22, 2024).

<sup>37</sup> <https://utulocal60.com/testing/wp-content/uploads/2016/03/Text-for-foul-time.pdf> (“The Enhanced Employee Protection System (EEPS) is an electronic means of providing track protection to employees along the right of way.”)

<sup>38</sup> White Paper at 3.



68. Because NJ Transit’s implementation of the RailwayNet<sup>SM</sup> system/AIM system and/or other same or similar system or method increases rail safety through a “communication-based/processor-based train control technology,” NJ Transit practices a “method to enhance railway control, to protect safety of railway workers on or near railway tracks.”

69. NJ Transit’s implementation of RailwayNet<sup>SM</sup> system/AIM system and/or other same or similar system or method further “configure[es] a mobile user device of a railway field worker to provide a device user interface to display information received via a network from a railway control apparatus and to permit the railway field worker to respond to prompts displayed thereon.”

70. NJ Transit’s implementation of the RailwayNet<sup>SM</sup> system/AIM system and/or other same or similar system or method includes providing mobile devices for roadway workers. NJ Transit’s implementation of the RailwayNet<sup>SM</sup> system/AIM system and/or other same or similar system includes an enhanced employee protection system, which requires providing a “company

issued cell phone” to workers.<sup>39</sup> Such company issued cell phones are further configured to provide a device user interface to display information received via a network, including “a four digit PIN (EEPS code)” which is provided “through their company cell phone.”<sup>40</sup>

#### Enhanced Employee Protection System (EEPS)

The Enhanced Employee Protection System (EEPS) is an electronic means of providing track protection to employees along the right of way. Prior to taking a track out of service or issuing foul time, the employee requesting to do so must possess a company issued cell phone. Through their company cell phone, the employee will be given a four digit PIN (EEPS code). When ready to relinquish the out of service limits or foul time, the protected employee must first provide the Dispatcher with their individual EEPS code. Only then will the Dispatcher be able to remove the blocking devices providing protection.

71. NJ Transit’s RailwayNet<sup>SM</sup> system/AIM system and/or other same or similar system or method has implemented a system whereby its CTC system permits users to respond to prompts over a network.<sup>41</sup>

#### Enhanced Employee Protection System (EEPS)

The Enhanced Employee Protection System (EEPS) is an electronic means of providing track protection to employees along the right of way. Prior to taking a track out of service or issuing foul time, the employee requesting to do so must possess a company issued cell phone. Through their company cell phone, the employee will be given a four digit PIN (EEPS code). When ready to relinquish the out of service limits or foul time, the protected employee must first provide the Dispatcher with their individual EEPS code. Only then will the Dispatcher be able to remove the blocking devices providing protection.

72. NJ Transit’s RailwayNet<sup>SM</sup> system/AIM system and/or other same or similar system or method also specifies providing back-office infrastructure and messaging, including “[s]torage and delivery of crew and consist information, train IDs and clearances.”<sup>42</sup>

73. NJ Transit’s implementation of the RailwayNet<sup>SM</sup> system/AIM system and/or other same or similar system or method provides information (e.g., an authorization code) to the railway worker’s mobile device. Such communication happens over a network. Further, the

<sup>39</sup> NJT EEPS Guidance Sheet at 1.; *see also* TELLER TECHNOLOGIES, <https://utulocal60.com/testing/wp-content/uploads/2017/06/Teller-Technologies.pdf> (last visited July 22, 2024) (providing contact information for a “Sprint Representative” to assist with activation of company provided phones).

<sup>40</sup> NJT EEPS Guidance Sheet at 1.

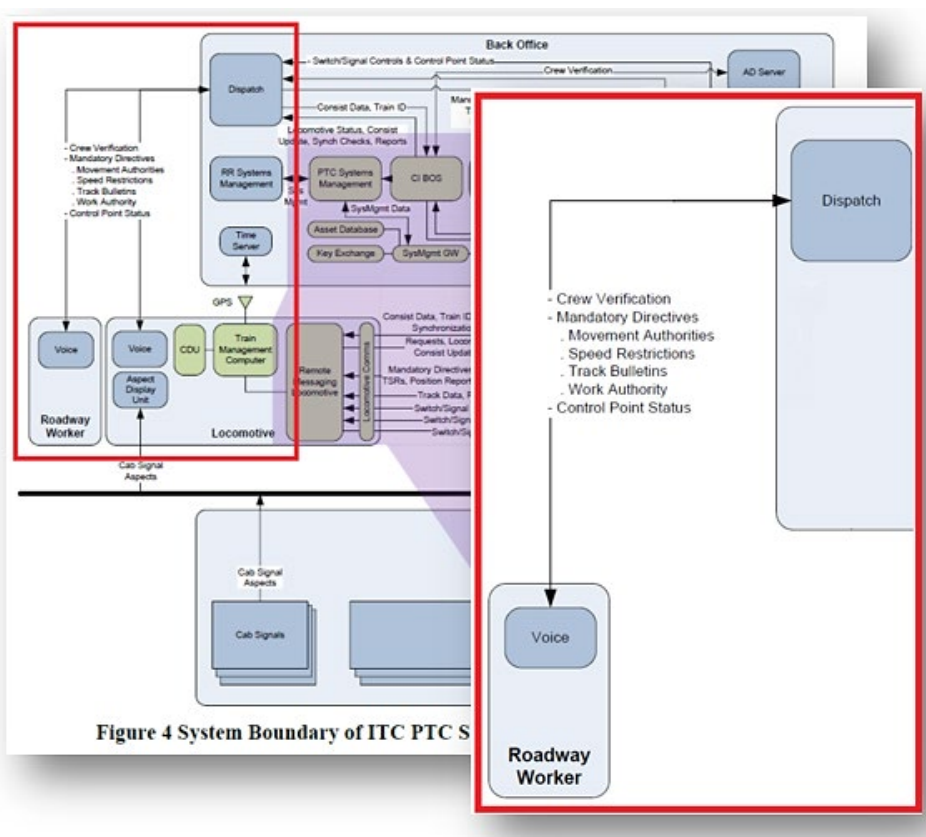
<sup>41</sup> NJT EEPS Guidance Sheet at 1.; *see also* TELLER TECHNOLOGIES, <https://utulocal60.com/testing/wp-content/uploads/2017/06/Teller-Technologies.pdf> (last visited July 22, 2024) (providing contact information for a “Sprint Representative” to assist with activation of company provided phones).

<sup>42</sup> White Paper at 7.

roadway worker is able to respond to prompts displayed on the mobile device in order to provide the CTC train dispatcher with the authorization code.

74. NJ Transit has directed its employees to a “Sprint Representative” to “setup their company phones to be able to receive the E.E.P.S. code,” as well as for all “company cell phone issues regarding the E.E.P.S. Code.”<sup>43</sup> Sprint, now part of T-Mobile, is a provider of network access to mobile devices.<sup>44</sup>

75. Furthermore, the RailwayNet<sup>SM</sup> system/AIM system or other same or similar system or method supports I-ETMS message flows, including communications with railway workers to communicate crew verification and mandatory directives.<sup>45</sup>



<sup>43</sup> NJT EEPS Guidance Sheet at 1.

<sup>44</sup> *Sprint is now part of the family*, T-MOBILE, <https://www.t-mobile.com/brand/t-mobile-sprint-merger-updates> (last visited July 22, 2024).

<sup>45</sup> *Positive Train Control Interoperability and Networking Research: Final Report*, Fed. Railroad Admin (Dec. 2015) at 14 [hereinafter referred to as “Final Report”].

76. Likewise, Wabtec acknowledges that it offers I-ETMS supported packages.<sup>46</sup> Wabtec also advertise that RailwayNet<sup>SM</sup> “offers reliable, tailored, and scalable PTC messaging. Utilizing VHF, cellular, Wi-Fi and MPLS, RailwayNet<sup>SM</sup> PTC delivers initialization messages, crew . . . .”<sup>47</sup>

77. Accordingly, NJ Transit’s implementation of RailwayNet<sup>SM</sup> system/AIM and/or other same or similar system or method, by providing a technology infrastructure to send and receive messages via a network and by providing mobile devices to rail workers, practices a method that “configure[es] a mobile user device of a railway field worker to provide a device user interface to display information received via a network from a railway control apparatus and to permit the railway field worker to respond to prompts displayed thereon.”

78. NJ Transit’s implementation of RailwayNet<sup>SM</sup> system/AIM system and/or other same or similar system or method further provides “a terminal user interface on a terminal to permit a terminal user of the terminal request the railway control apparatus 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.”

79. NJ Transit operates a control center that “controls train movements, signals and switches and monitors the location and status of every locomotive throughout the system.”<sup>48</sup> The train dispatchers operate those switches and display signals to “remotely dispatch and monitor

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<sup>46</sup> *I-ETMS Positive Train Control (PTC) Communications Package*, WABTEC, <https://www.wabteccorp.com/digital-intelligence/signaling-and-train-control/communications/i-etms-positive-train-control-ptc-communications-package> (last visited July 22, 2024).

<sup>47</sup> *RailwayNet Positive Train Control Communication Solution*, WABTEC, <https://www.wabteccorp.com/digital-intelligence/signaling-and-train-control/communications/railwaynet-positive-train-control-communication-solution> (last visited July 22, 2024).

<sup>48</sup> *Train Control: NJ Transit Celebrates Certification of Positive Train Control System*, NJTRANSIT, <https://www.njtransit.com/ptc> (last visited July 22, 2024).

train movements,”<sup>49</sup> as well as to place and remove “the blocking devices providing [track] protection [to employees].”<sup>50</sup>

80. NJ Transit’s control centers, examples of which are shown below, include a number of user terminals through which train dispatchers control the movement of trains, including by placing blocks on specified track sections:

**ROC**<sup>51</sup>



**PSCC**<sup>52</sup>



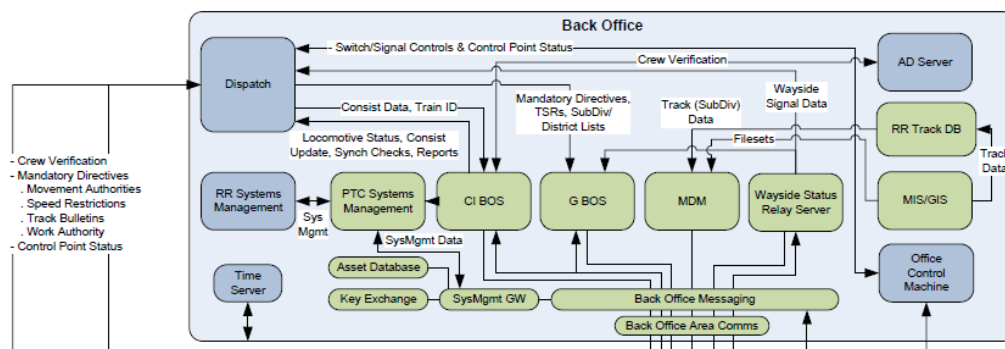
<sup>49</sup> *New Jersey Transit*, ROSS & BARUZZINI, <https://www.rossbar.com/projects/new-jersey-transit/> (last visited July 22, 2024); *Job Posting: Supervisor, Train Operations*, NJTRANSIT, [https://njtransit.my.salesforce-sites.com/FCMS\\_\\_CMSLayout?jobIds=a295x000008DUcqAAG&page=CorporateDetailPage&sessionId=&jobSite=Railroad&p=Candidate&ApplPage=Corporate&pageTitle=Supervisor%2C%20Train%20Operations](https://njtransit.my.salesforce-sites.com/FCMS__CMSLayout?jobIds=a295x000008DUcqAAG&page=CorporateDetailPage&sessionId=&jobSite=Railroad&p=Candidate&ApplPage=Corporate&pageTitle=Supervisor%2C%20Train%20Operations) (last visited July 22, 2024).

<sup>50</sup> NJT EEPS Guidance Sheet at 1.

<sup>51</sup> CASE STUDY: NEW JERSEY TRANSIT, <https://activu.com/uploads/NJ-Transit-Case-Study.pdf> (last visited July 22, 2024).

<sup>52</sup> *Rare Peek Inside The Penn Station Central Control Room*, GOTHAMIST (July 26, 2017), <https://gothamist.com/news/a-rare-peek-inside-the-penn-station-central-control-room>.

81. The RailwayNet<sup>SM</sup> system/AIM system and/or other same or similar system or method includes an “integrations server and software” that “provides connectivity between the railroad IT systems and the hosted back-office components.”<sup>53</sup> The integration server provides a terminal user interface on a terminal for use by the system dispatcher.



#### AIM® integration server

The ARINC RailwayNet integrations server and software provides connectivity between the railroad IT systems and the hosted back-office components. The functions of this application include:

- › Interface with customer's IT gateway
- › Interface with back office
- › Manage crew authentication through the customer's IT gateway
- › Functions to assign train ID to trains based on the clearance number
- › Functions to manage train consist through the customer's IT gateway
- › Functions to track, display, and store events and alarms

## Centralized Traffic Control and SCADA

Collins designs and integrates state-of-the-art rail control solutions using our ARINC Advanced Information Management (AIM®) platform. AIM serves as an end-to-end solution for all rail control requirements, including SCADA, Centralized Traffic Control, Positive Train Control (PTC) and control center integration. Highly flexible and feature-rich, AIM enables railroads to maximize operational efficiency, cost-effectiveness and safety, all while providing an environment protected by the latest tools and techniques in cybersecurity.

#### KEY AREAS OF EXPERTISE

- Train monitoring and control
- Automatic train tracking
- Automatic route setting/automatic routing
- Automatic traffic regulation and schedule deviation
- Schedule management
- Integrated yard management
- Bulletins, authorities and restrictions management
- Employee in Charge (EIC) terminals
- Emergency Operating Procedures (EOP)
- Power planning
- Playback and simulation
- Data acquisition
- Interface integration

<sup>53</sup> See White Paper at 8 (illustrating “AIM® integration server”); see also *RailwayNet Positive Train Control Communication Solution*, WABTEC, <https://www.wabteccorp.com/digital-intelligence/signaling-and-train-control/communications/railwaynet-positive-train-control-communication-solution> (last visited July 22, 2024).

82. The RailwayNet<sup>SM</sup> system/AIM system and/or other same or similar system or method, as implemented by NJ Transit, provides the network connections and office applications required to exchange critical information among railroads. It is available on a subscription basis as hosted SaaS (software as a service) and IaaS (infrastructure as a service) solutions and messaging from the back office to the locomotive through VHF, cellular, and Wi-Fi is also available.<sup>54</sup>

83. The RailwayNet<sup>SM</sup> system/AIM system or other same or similar system or method provides “train monitoring and control,” “automatic route setting/automatic routing,” “automatic traffic regulation,” and “bulletins, authorities, and restrictions management,” as shown, for example, in the image below.<sup>55</sup> One or more of these functionalities encompasses the claimed limitation “permit a terminal user of the terminal request the railway control apparatus 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.”

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<sup>54</sup> *New from Rockwell Collins: Shared-network PTC platform*, RAILWAY AGE 14 (July 2016), [https://issuu.com/railwayage/docs/july\\_2016\\_railway\\_age](https://issuu.com/railwayage/docs/july_2016_railway_age); *RailwayNet Positive Train Control Communication Solution*, WABTEC, <https://www.wabteccorp.com/digital-intelligence/signaling-and-train-control/communications/railwaynet-positive-train-control-communication-solution> (last visited July 22, 2024).

<sup>55</sup> *Intelligence-Based Rail Solutions*, Collins Aerospace, <https://web.archive.org/web/20211122013021/https://www.collinsaerospace.com/-/media/project/collinsaerospace/collinsaerospace-website/product-assets/marketing/r/rail/arinc-rail-solutions-for-passengers.pdf?rev=e7e5ddbff2de4154ba265f03e27f14d3>; *see also Advanced Information Management (AIM) Rail Dispatch*, WABTEC, <https://www.wabteccorp.com/digital-intelligence/signaling-and-train-control/dispatch/advanced-information-management-aim-rail-dispatch> (last visited July 22, 2024).

## Centralized Traffic Control and SCADA

Collins designs and integrates state-of-the-art rail control solutions using our ARINC Advanced Information Management (AIM®) platform. AIM serves as an end-to-end solution for all rail control requirements, including SCADA, Centralized Traffic Control, Positive Train Control (PTC) and control center integration. Highly flexible and feature-rich, AIM enables railroads to maximize operational efficiency, cost-effectiveness and safety, all while providing an environment protected by the latest tools and techniques in cybersecurity.

### KEY AREAS OF EXPERTISE

- |                                                       |                                                      |
|-------------------------------------------------------|------------------------------------------------------|
| • Train monitoring and control                        | • Bulletins, authorities and restrictions management |
| • Automatic train tracking                            | • Employee in Charge (EIC) terminals                 |
| • Automatic route setting/automatic routing           | • Emergency Operating Procedures (EOP)               |
| • Automatic traffic regulation and schedule deviation | • Power planning                                     |
| • Schedule management                                 | • Playback and simulation                            |
| • Integrated yard management                          | • Data acquisition                                   |
|                                                       | • Interface integration                              |

84. The RailwayNet<sup>SM</sup> system/AIM system and/or other same or similar system or method, as implemented by NJ Transit, that places track sections in “foul time” necessarily “permit a terminal user of the terminal request the railway control apparatus 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” as recited in this claim element.

85. Specifically, FRA regulations 49 C.F.R. § 214.323 defines “foul time” as “a method of establishing working limits on controlled track in which a roadway worker is notified by the train dispatcher or control operator that *no trains will operate within a specific segment of controlled track until the roadway worker reports clear of the track.*” (Emphasis added).

86. NJ Transit’s implementation of the RailwayNet<sup>SM</sup> system/AIM system and/or other same or similar system or method has the ability to take tracks out of service and/or place

tracks in foul time.<sup>56</sup>

#### Enhanced Employee Protection System (EEPS)

The Enhanced Employee Protection System (EEPS) is an electronic means of providing track protection to employees along the right of way. Prior to taking a track out of service or issuing foul time, the employee requesting to do so must possess a company issued cell phone. Through their company cell phone, the employee will be given a four digit PIN (EEPS code). When ready to relinquish the out of service limits or foul time, the protected employee must first provide the Dispatcher with their individual EEPS code. Only then will the Dispatcher be able to remove the blocking devices providing protection.

87. Because NJ Transit, through its implementation of the RailwayNet<sup>SM</sup> system/AIM system and/or other same or similar system or method, has the ability to take tracks out of service and/or place tracks in foul time, it practices the claimed method “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.”

88. In order to comply with and implement FRA’s recommendations in its regulations (communication-based/processor-based train control technology designed to address a number of railway safety issues including train-to-train collisions, over-speed derailments, incursions into established work-zone limits, and train movement through a main-line switch that is in an improper position), RailwayNet<sup>SM</sup> system/AIM system and/or other same or similar system or method must be configured to place a block on one or more sections of railway track to prevent trains from traversing the one or more sections of railway track.<sup>57</sup>

89. Accordingly, by permitting the train dispatcher to take a track out of service and/or place a track under foul time, the RailwayNet<sup>SM</sup> system/AIM system and/or other same or similar system or method, as implemented by NJ Transit, “permit[s] a terminal user of the terminal request the railway control apparatus 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

<sup>56</sup> NJT EEPS Guidance Sheet at 1.

<sup>57</sup> See Final Report at 14; see also *NEC One-Year Plan* 2019 at 233.

to said track sections.”

90. NJ Transit’s implementation of the RailwayNet<sup>SM</sup> system/AIM system and/or other same or similar system or method further generates “by the railway control apparatus a release code and transmit[s] the release code to an electronic contact address accessible by the railway field worker via operation of the user interface of the user terminal.”

91. In a report submitted to the U.S. Department of Transportation regarding the AIM/RailwayNet<sup>SM</sup> system and/or other same or similar system or method, communications to the roadway workers are generated in the “back office.”<sup>58</sup> Said “back office” comprises the claimed railway control apparatus.

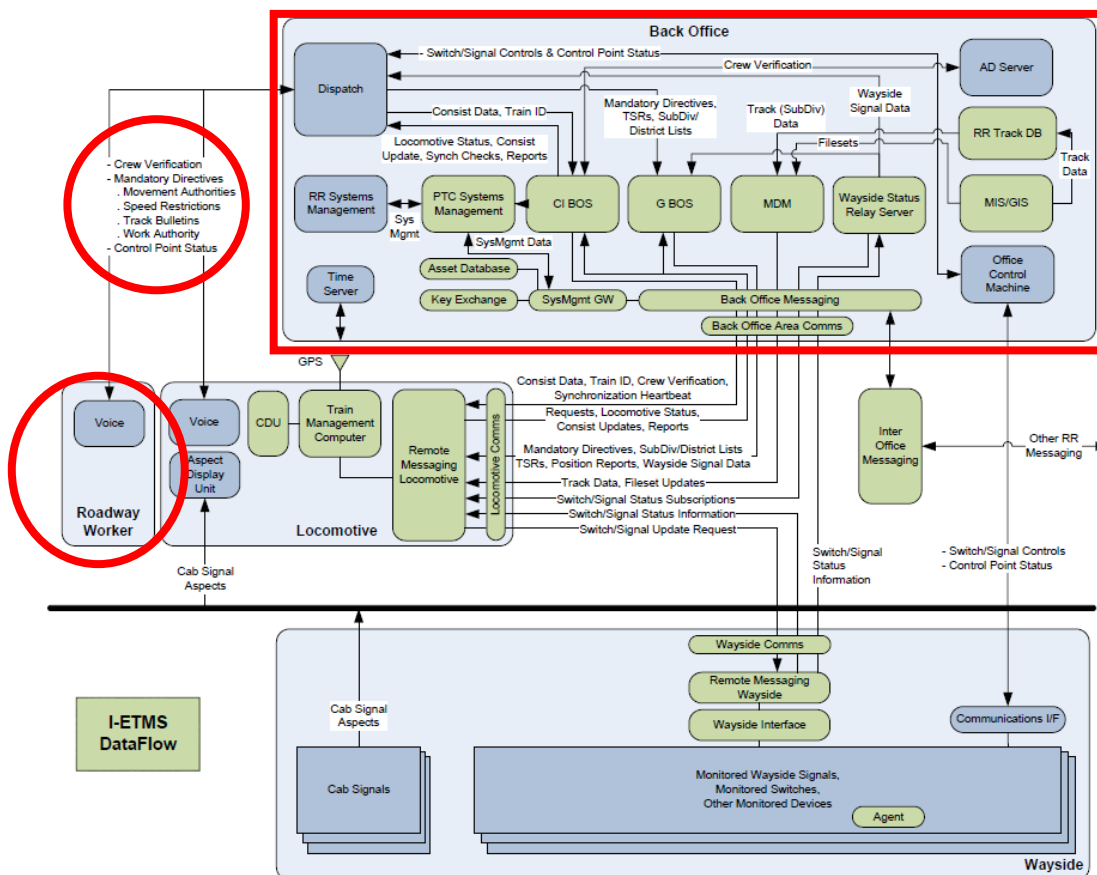


Figure 2 I-ETMS PTC Message Flows

<sup>58</sup> Final Report at 11.

92. The “back office” of NJ Transit’s implementation of the RailwayNet<sup>SM</sup> system/AIM system and/or other same or similar system or method generates a release code.<sup>59</sup>

Enhanced Employee Protection System (EEPS)

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93. The “back office” of NJ Transit’s implementation of the RailwayNet<sup>SM</sup> system/AIM system and/or other same or similar system or method then retrieves the phone number of the employee (*i.e.*, an “electronic contact address”), which the Dispatcher must confirm the accuracy of with the employee.<sup>60</sup>

94. This release code is then transmitted to an electronic contact address accessible by the worker via their company issued cell phone.<sup>61</sup>

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95. The authorization code corresponds to the blocking protection applied in the CTC control system.<sup>62</sup>

Enhanced Employee Protection System (EEPS)

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<sup>59</sup> NJT EEPS Guidance Sheet at 1.

<sup>60</sup> *Id.*

<sup>61</sup> *Id.*

<sup>62</sup> *Id.*

96. The RailwayNet<sup>SM</sup> system/AIM system and/or other same or similar system or method, as implemented by NJ Transit, specifies providing back office infrastructure and messaging, including “[s]torage and delivery of crew and consist information, train IDs and clearances.”<sup>63</sup> It further specifies enabling compliance with I-ETMS systems.<sup>64</sup> Because I-ETMS systems require communication of crew verification and employee authentication, NJ Transit maintains electronic contact addresses of the railway field workers from a rail personnel contact database. The RailwayNet<sup>SM</sup> system/AIM system and/or other same or similar system or method messaging functions also include: “[k]ey exchange server,” described as “[s]ecurity keys with data store.”<sup>65</sup>

A summary of the ARINC RailwayNet PTC hosting service functionality is shown below.

| Messaging functions             | Description                                                                                                                                    | Included |
|---------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------|----------|
| Back-office messaging           | Message transmission for the railroad back office                                                                                              | •*       |
| Inter-office messaging          | Message transmission between assets and railroad back offices in support of train initialization                                               | •*       |
| Systems management gateway      | Messaging systems management                                                                                                                   | •        |
| Systems management              | Remote asset monitoring and control                                                                                                            | Optional |
| Back-office area communications | Communications infrastructure at the Annapolis facility in support of railroad remote asset connectivity via cellular and internet connections | •        |
| Key exchange server             | Security keys with data store                                                                                                                  | •        |

97. Furthermore, NJ Transit has directed its employees to a “Sprint Representative” to “setup their company phones to be able to receive the E.E.P.S. code,” as well as for all “company

<sup>63</sup> See White Paper at 7; see also *Advanced Information Management (AIM) Rail Dispatch*, WABTEC, <https://www.wabteccorp.com/digital-intelligence/signaling-and-train-control/dispatch/advanced-information-management-aim-rail-dispatch> (last visited July 22, 2024) (similar advertisements from Wabtec).

<sup>64</sup> See Final Report at 43.

<sup>65</sup> White Paper at 7.

cell phone issues regarding the E.E.P.S. Code.”<sup>66</sup> Sprint, now part of T-Mobile, is a provider of network access to mobile devices as well as related memory storage services.<sup>67</sup>

98. Accordingly, since NJ Transit’s implementation of the RailwayNet<sup>SM</sup> system/AIM system and/or other same or similar system or method provides roadway workers with an authorization code that corresponds to the blocking protection applied in the control system, NJ Transit practices the step of “generating by the railway control apparatus a release code and transmitting the release code to an electronic contact address accessible by the railway field worker via operation of the user interface of the user terminal.”

99. NJ Transit’s implementation of the RailwayNet<sup>SM</sup> system/AIM system and/or other same or similar system or method permits “the block to said one or more track sections to be removed by the railway control apparatus only upon receiving the release code from the user terminal in return.”

100. NJ Transit’s enhanced employee protection system requires the dispatcher to enter the “authorization code” in order to remove the protection (*e.g.*, the foul time) from the track.<sup>68</sup>

#### Enhanced Employee Protection System (EEPS)

The Enhanced Employee Protection System (EEPS) is an electronic means of providing track protection to employees along the right of way. Prior to taking a track out of service or issuing foul time, the employee requesting to do so must possess a company issued cell phone. Through their company cell phone, the employee will be given a four digit PIN (EEPS code). When ready to relinquish the out of service limits or foul time, the protected employee must first provide the Dispatcher with their individual EEPS code. Only then will the Dispatcher be able to remove the blocking devices providing protection.

<sup>66</sup> Scott Spratt, EEPS Code, SMARTLOCAL60 (June 30, 2017), <https://utulocal60.com/2017/06/30/eeeps-code/>.

<sup>67</sup> Sprint is now part of the family, T-MOBILE, <https://www.t-mobile.com/brand/t-mobile-sprint-merger-updates> (last visited July 22, 2024).

<sup>68</sup> NJT EEPS Guidance Sheet at 1-2.

Prior to Releasing Foul Time

1. The employee granted the foul time must confirm with the Dispatcher their title and name, and track designation and limits being released,

AND

2. The Dispatcher must repeat this information, and the employee must confirm it,

AND THEN

3. Report to the Dispatcher their EEPS code, to allow the Dispatcher to remove protection.

101. The FRA has recognized that systems such as the enhanced employee protection system implemented by NJ Transit via the RailwayNet<sup>SM</sup> system/AIM system and/or other same or similar system or method complies with applicable recommended regulations (communication-based/processor-based train control technology designed to address a number of rail safety issues including train-to-train collisions, over-speed derailments, incursions into established work-zone limits, and train movement through a main-line switch that is in an improper position), by providing that the “dispatching system will not allow a dispatcher to release controlled track working limits until the RWIC affirmatively indicates via an electronic prompt that he or she is releasing working limits authority.”<sup>69</sup>

102. Accordingly, NJ Transit’s implementation of the RailwayNet<sup>SM</sup> system/AIM system and/or other same or similar system or method thus permits “the block to said one or more track sections to be removed by the railway control apparatus only upon receiving the release code from the user terminal in return.”

103. Therefore, NJ Transit, through its implementation of the RailwayNet<sup>SM</sup> system/AIM systems and/or other same or similar system or method has infringed and continues to infringe at least claim 5 of the ’782 patent.

104. As direct and proximate result of NJ Transit’s infringement of the ’782 patent,

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<sup>69</sup> *Railroad Workplace Safety; Roadway Worker Protection Miscellaneous Revisions (RRR)*, FRA-2008-0086 (May 27, 2016) at 81, <https://www.fra.dot.gov/eLib/Details/L17467> [hereinafter referred to as “RRR”].

Railware has been injured and has been caused significant harm and financial damages.

105. NJ Transit has also induced and continues to induce infringement of at least claim 5 of the '782 patent in violation of 35 U.S.C. § 271(b).

106. NJ Transit induces its users, and/or developers of its systems or methods to infringe at least claim 5 of the '782 patent, and does so with the specific intent, by providing instructions, directions, information, and/or knowledge on how to use its systems and/or incorporate its systems or methods into other products (including both the RailwayNet<sup>SM</sup> system/AIM and/or same or similar systems or methods). For example, NJ Transit instructs its own dispatchers, as well as potentially dispatchers employed by other transportation providers like Amtrak<sup>70</sup>, on how to use the system to infringe.

107. NJ Transit had notice of and was aware of its infringement of the '782 patent by at least December 13, 2016. To the extent the marking requirements of 35 U.S.C. § 287 apply, NJ Transit has had constructive knowledge of the '782 patent at least since October 21, 2020. Further, NJ Transit knew or should have known and received notice of the '782 patent on at least June 15, 2022, which is the date Railware filed suit against Amtrak for infringement of the '782 patent.

108. NJ Transit's continued infringement on or after any of these dates is in spite of the objectively high likelihood that its activities constitute infringement of a valid patent, and this risk was either known or so obvious that it should have been known to NJ Transit. Thus, NJ Transit's continued infringement at least as of December 13, 2016 is willful and deliberate.

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<sup>70</sup> See *Rare Peek Inside The Penn Station Central Control Room*, GOTHAMIST (July 26, 2017), <https://gothamist.com/news/a-rare-peek-inside-the-penn-station-central-control-room>; see also NORTHEAST CORRIDOR ONE-YEAR IMPLEMENTATION PLAN: FISCAL YEAR 2018 (Oct. 2017), <http://nec-commission.com/app/uploads/2018/03/NEC-One-Year-Implementation-Plan-FY18.pdf> (illustrating Amtrak's plan to implement an "EEPS" system throughout the Northeast Corridor.)

109. Railware has suffered and continues to suffer damages and irreparable harm as a result of NJ Transit's past and ongoing infringement. Unless and until NJ Transit's infringement is enjoined, Railware will continue to be damaged and irreparably harmed.

110. Railware is entitled to all remedies at law and equity including, but not limited to, an injunction against NJ Transit's infringement of the '782 patent pursuant to 35 U.S.C. § 283.

111. Railware is entitled to damages for NJ Transit's infringement of the '782 patent including, but not limited to, damages pursuant to 35 U.S.C. §§ 284 and 285.

## **SECOND CLAIM FOR RELIEF**

### **(Infringement of the '835 patent)**

112. Railware repeats and incorporates by reference all prior allegations of this Complaint as if fully set forth herein.

113. Railware is the owner by assignment of all rights, title, and interest in and to the '835 patent.

114. The '835 patent is valid and enforceable.

115. Claim 19 of the '835 patent recites:

A method for controlling railway access using a railway traffic control apparatus of a centralized railway control system configured for centralized control of traffic of a centrally controllable railway network including plural railways and a plurality of railway traffic interlocks dispersed in said plural railways constituting said railway network, the method comprising:

providing a user interface of the railway traffic control apparatus, including a block placing part to place a block on one or more specified track sections in any of said plural railways constituting said railway network that is managed by centralized control operation from the railway traffic control apparatus, the railway traffic control apparatus controlling, by said centralized control operation, one or more interlocks amongst the plurality of railway traffic interlocks dispersed in said plural railways constituting said railway network, to block railway traffic to the specified track sections and thereby to permit a railway field worker to enter the track sections;

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

permitting the block to said one or more track sections to be removed only upon entry of the removal by said centralized control operation from the railway traffic control apparatus.

116. In violation of 35 U.S.C. § 271(a), NJ Transit has infringed and continues to infringe one or more claims of the '835 patent by making, using, offering for sale, selling, and/or importing in or into the United States a system or method covered by the '835 patent, including, but not limited to, at least NJ Transit's implementation and/or use of the RailwayNet<sup>SM</sup> system/AIM system and/or other same or similar system or method.<sup>71</sup>

117. NJ Transit's implementation of the RailwayNet<sup>SM</sup> system/AIM system and/or other same or similar system includes an enhanced employee protection functionality, which protects the safety of railway workers on or near railway tracks.<sup>72</sup>

118. NJ Transit, through its implementation and/or use of the RailwayNet<sup>SM</sup> system/AIM system and/or other same or similar system or method, infringes at least claim 19 of the '835 patent.

119. NJ Transit's implementation of the RailwayNet<sup>SM</sup> system/AIM system and/or other same or similar system or method practices a "method for controlling railway access using a railway traffic control apparatus of a centralized railway control system configured for centralized control of traffic of a centrally controllable railway network including plural railways and a plurality of railway traffic interlocks dispersed in said plural railways constituting said

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<sup>71</sup> Further investigation may reveal that others of NJ Transit's products and systems also directly or indirectly infringe at least claim 19 or other claims of the '835 patent.

<sup>72</sup> NJT EEPS Guidance Sheet at 1 ("The Enhanced Employee Protection System (EEPS) is an electronic means of providing track protection to employees along the right of way.")

railway network.”

120. NJ Transit owns and/or operates one or more control centers, including the PSCC located at New York Penn Station and the ROC located in Kearny, NJ.<sup>73</sup> Control centers are centralized railway control systems using methods to control access to railway tracks configured for centralized control of traffic of a centrally controllable railway network including plural railways and a plurality of railway traffic interlocks dispersed in said plural railways constituting said railway network.

121. NJ Transit’s control centers, examples of which are shown below, include a number of user terminals through which train dispatchers control the movement of trains, including by placing blocks on specified track sections:

**ROC**<sup>74</sup>



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<sup>73</sup> *Id.*

<sup>74</sup> CASE STUDY: NEW JERSEY TRANSIT, <https://activu.com/uploads/NJ-Transit-Case-Study.pdf> (last visited July 22, 2024).

PSCC<sup>75</sup>

122. NJ Transit’s control centers “control[] train movements, signals and switches and monitors the location and status of every locomotive throughout the system.”<sup>76</sup> The train dispatchers operate those switches and display signals to “remotely dispatch and monitor train movements,”<sup>77</sup> as well as to place and remove “the blocking devices providing [track] protection [to employees].”<sup>78</sup>

123. The RailwayNet<sup>SM</sup> system/AIM system and/or other same or similar system or method provides “centralized traffic control,” “train monitoring and control,” “automatic route setting/automatic routing,” “automatic traffic regulation,” and “bulletins, authorities,” and

<sup>75</sup> *A Rare Peek Inside The Penn Station Central Control Room*, GOTHAMIST (July 26, 2017), <https://gothamist.com/news/a-rare-peek-inside-the-penn-station-central-control-room>.

<sup>76</sup> *Positive Train Control: NJ Transit Celebrates Certification of Positive Train Control System*, NJTRANSIT, <https://www.njtransit.com/ptc> (last visited July 22, 2024).

<sup>77</sup> *New Jersey Transit*, ROSS & BARUZZINI, <https://www.rossbar.com/projects/new-jersey-transit/> (last visited July 22, 2024); *Job Posting: Supervisor, Train Operations*, NJTRANSIT, [https://njtransit.my.salesforce-sites.com/FCMS\\_\\_CMSLayout?jobIds=a295x000008DUcqAAG&page=CorporateDetailPage&sessionId=&jobSite=Railroad&p=Candidate&ApplPage=Corporate&pageTitle=Supervisor%2C%20Train%20Operations](https://njtransit.my.salesforce-sites.com/FCMS__CMSLayout?jobIds=a295x000008DUcqAAG&page=CorporateDetailPage&sessionId=&jobSite=Railroad&p=Candidate&ApplPage=Corporate&pageTitle=Supervisor%2C%20Train%20Operations) (last visited July 22, 2024).

<sup>78</sup> NJT EEPS Guidance Sheet at 1.

“restrictions management.”<sup>79</sup>

## Centralized Traffic Control and SCADA

Collins designs and integrates state-of-the-art rail control solutions using our ARINC Advanced Information Management (AIM®) platform. AIM serves as an end-to-end solution for all rail control requirements, including SCADA, Centralized Traffic Control, Positive Train Control (PTC) and control center integration. Highly flexible and feature-rich, AIM enables railroads to maximize operational efficiency, cost-effectiveness and safety, all while providing an environment protected by the latest tools and techniques in cybersecurity.

### KEY AREAS OF EXPERTISE

- |                                                       |                                                      |
|-------------------------------------------------------|------------------------------------------------------|
| • Train monitoring and control                        | • Bulletins, authorities and restrictions management |
| • Automatic train tracking                            | • Employee in Charge (EIC) terminals                 |
| • Automatic route setting/automatic routing           | • Emergency Operating Procedures (EOP)               |
| • Automatic traffic regulation and schedule deviation | • Power planning                                     |
| • Schedule management                                 | • Playback and simulation                            |
| • Integrated yard management                          | • Data acquisition                                   |
|                                                       | • Interface integration                              |

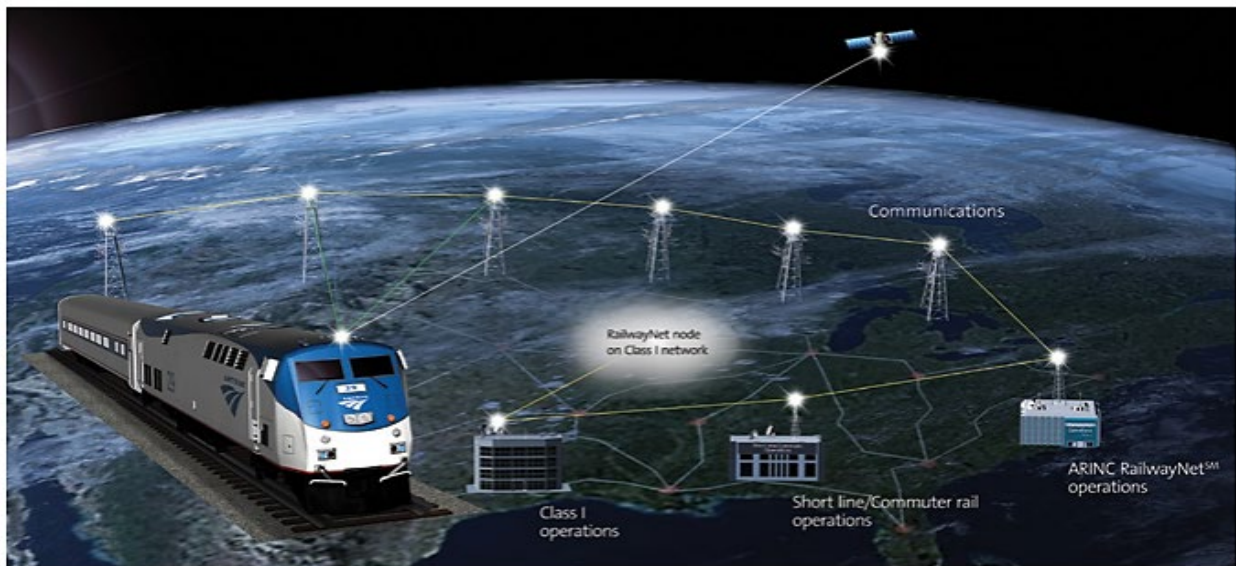
124. NJ Transit implemented the RailwayNet<sup>SM</sup> system/AIM system and/or other same or similar system or method as a SaaS and/or IaaS—a software/infrastructure as a service—product that provides “full-featured network management and infrastructure, hardware, network, operating systems, and applications for fault, performance, security and configuration management.”<sup>80</sup> NJ Transit has further implemented the RailwayNet<sup>SM</sup> system/AIM system and/or other same or similar system or method.

<sup>79</sup> *Intelligence-Based Rail Solutions*, Collins Aerospace, <https://web.archive.org/web/20211122013021/https://www.collinsaerospace.com/-/media/project/collinsaerospace/collinsaerospace-website/product-assets/marketing/r/rail/arinc-rail-solutions-for-passengers.pdf?rev=e7e5ddbff2de4154ba265f03e27f14d3>; see also *Advanced Information Management (AIM) Rail Dispatch*, WABTEC, <https://www.wabteccorp.com/digital-intelligence/signaling-and-train-control/dispatch/advanced-information-management-aim-rail-dispatch> (last visited July 22, 2024).

<sup>80</sup> White Paper at 6.

125. RailwayNet<sup>SM</sup> is advertised to help facilitate the increases in safety and reliability in train control systems.<sup>81</sup>

126. RailwayNet<sup>SM</sup> system/AIM system and/or same or similar system or method, which NJ Transit uses, improves rail safety. More particularly, “[t]his system refers to communication-based/processor-based train control technology designed to address a number of rail safety issues, including train-to-train collisions, over-speed derailments, incursions into established work-zone limits, and train movement through a main-line switch that is in an improper position.”<sup>82</sup>



127. The RailwayNet<sup>SM</sup> system/AIM system and/or same or similar system or method was implemented throughout NJ Transit’s routes.<sup>83</sup>

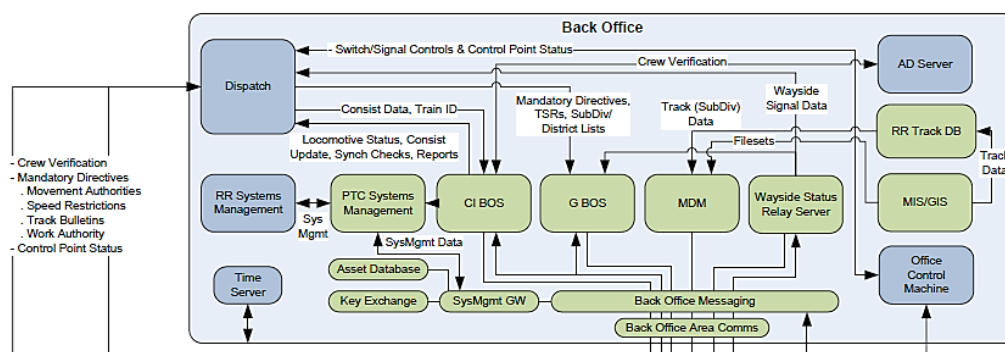
<sup>81</sup> See, e.g., *Amtrak signs nationwide contract for Rockwell Collins’ ARINC RailwayNet<sup>SM</sup> Positive Train Control service*, COLLINS AEROSPACE (Sep. 6, 2017), [https://rockwellcollins.com/-/media/Files/Unsecure/Services-And-Support/Information-Management/ARINC-Rail/RC\\_Amtrak-Press-Release\\_09-06-17.ashx](https://rockwellcollins.com/-/media/Files/Unsecure/Services-And-Support/Information-Management/ARINC-Rail/RC_Amtrak-Press-Release_09-06-17.ashx); *RailwayNet Positive Train Control Communication Solution*, WABTEC, <https://www.wabteccorp.com/digital-intelligence/signaling-and-train-control/communications/railwaynet-positive-train-control-communication-solution> (last visited July 22, 2024).

<sup>82</sup> White Paper at 3.

<sup>83</sup> *Collins Aerospace’s ARINC Rail Solutions to deliver ‘big data’ capabilities to NJ TRANSIT*, COLLINS AEROSPACE, (Dec. 6, 2019), <https://www.collinsaerospace.com/news/news/2019/12/collins-arinc-rail-solution-deliver-big-data-capabilities-nj-transit> (“NJ TRANSIT has awarded the ARINC rail solutions team at Collins Aerospace Systems a three-year contract to replace its Train Management and Control (TMAC) and Supervisory Control And Data Acquisition (SCADA) Systems. These systems are the main command and control platforms for

128. As explained below, the RailwayNet<sup>SM</sup> system/AIM system and/or other same or similar system or method is a hosted network, messaging and application platform, designed to assist operators in meeting the requirements mandated by the Rail Safety Improvement Act of 2008 (the “Act”). The Act directs the Federal Railroad Administration (FRA) to mandate new regulations focused on railroad safety. When used in conjunction with the operator’s train control infrastructure, the RailwayNet<sup>SM</sup> system/AIM system and/or same or similar system or method helps facilitate the increases in safety and reliability.<sup>84</sup>

129. The RailwayNet<sup>SM</sup> system/AIM system and/or other same or similar system or method includes an “integrations server and software” that “provides connectivity between the railroad IT systems and the hosted back-office components.”<sup>85</sup> The integration server provides an interface with various system components.



NJ TRANSIT’s entire operating area, providing real-time monitoring and control under normal and emergency conditions. . . . Through ARINC’s Advanced Information Management (AIM®) rail system, NJ TRANSIT will receive a modern platform design to meet the monitoring and control requirements of its commuter rail operations.”); Collins Aerospace, *News: All aboard!* . . . , Facebook (Dec. 6, 2019), <https://www.facebook.com/collinsaerospace/posts/news-all-aboard-our-arinc-rail-solution-team-is-working-to-update-the-main-command/10157012620672473/> (“NEWS: 📢 All aboard! Our #ARINC rail solution team is working to update the main command and control platforms for NJ TRANSIT, which is the nation’s third-largest provider of bus, rail and light rail transit.”)

<sup>84</sup> See, e.g., *Amtrak signs nationwide contract for Rockwell Collins' ARINC RailwayNet<sup>SM</sup> Positive Train Control service*, COLLINS AEROSPACE (Sep. 6, 2017), [https://rockwellcollins.com/-/media/Files/Unsecure/Services-And-Support/Information-Management/ARINC-Rail/RC\\_Amtrak-Press-Release\\_09-06-17.ashx](https://rockwellcollins.com/-/media/Files/Unsecure/Services-And-Support/Information-Management/ARINC-Rail/RC_Amtrak-Press-Release_09-06-17.ashx).

<sup>85</sup> See White Paper at 8 (illustrating “AIM<sup>®</sup> integration server”).

**AIM® integration server**

The ARINC RailwayNet integrations server and software provides connectivity between the railroad IT systems and the hosted back-office components. The functions of this application include:

- › Interface with customer's IT gateway
- › Interface with back office
- › Manage crew authentication through the customer's IT gateway
- › Functions to assign train ID to trains based on the clearance number
- › Functions to manage train consist through the customer's IT gateway
- › Functions to track, display, and store events and alarms

**Centralized Traffic Control and SCADA**

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**KEY AREAS OF EXPERTISE**

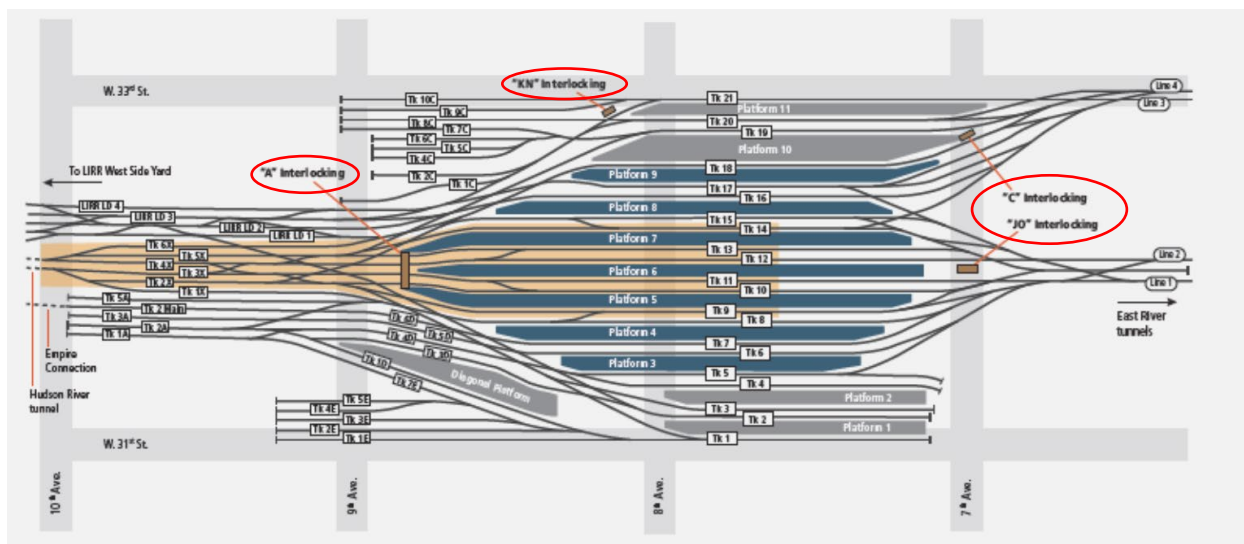
- |                                                       |                                                      |
|-------------------------------------------------------|------------------------------------------------------|
| • Train monitoring and control                        | • Bulletins, authorities and restrictions management |
| • Automatic train tracking                            | • Employee in Charge (EIC) terminals                 |
| • Automatic route setting/automatic routing           | • Emergency Operating Procedures (EOP)               |
| • Automatic traffic regulation and schedule deviation | • Power planning                                     |
| • Schedule management                                 | • Playback and simulation                            |
| • Integrated yard management                          | • Data acquisition                                   |
|                                                       | • Interface integration                              |

130. The RailwayNet<sup>SM</sup> system/AIM system and/or other same or similar system or method, implemented by NJ Transit, provides the network connections and office applications required to exchange critical information among railroads. It is available on a subscription basis as hosted SaaS (software as a service) and IaaS (infrastructure as a service) solutions, and messaging from the back office to the locomotive through VHF, cellular, and Wi-Fi is also available.<sup>86</sup>

131. The RailwayNet<sup>SM</sup> system/AIM system and/or other same or similar system or method, as implemented by NJ Transit, further controls plural railways and a plurality of railway traffic interlocks. Specifically, Centralized Train Control systems, such as that employed by NJ

<sup>86</sup> *New from Rockwell Collins: Shared-network PTC platform*, RAILWAY AGE 14 (July 2016), [https://issuu.com/railwayage/docs/july\\_2016\\_railway\\_age](https://issuu.com/railwayage/docs/july_2016_railway_age); *RailwayNet Positive Train Control Communication Solution*, WABTEC, <https://www.wabteccorp.com/digital-intelligence/signaling-and-train-control/communications/railwaynet-positive-train-control-communication-solution> (last visited July 22, 2024).

Transit and its implementation of the RailwayNet<sup>SM</sup> system/AIM and/or other same or similar system or method “consists of a centralized train dispatcher’s office that controls railroad interlocking and traffic flows in portions of the rail system designated as CTC territory.”<sup>87</sup> Train dispatchers in the control center have control over all interlockings on NJ Transit’s railroads.<sup>88</sup> For example, the below image illustrates a plurality of interlocks that are controlled through PSCC.<sup>89</sup>



132. NJ Transit implemented the RailwayNet<sup>SM</sup> system/AIM system and/or other same or similar system or method—a hosted network, messaging and application platform as amended—on NJ Transit’s railroads, including any commuter and freight routes that host NJ Transit services.<sup>90</sup>

<sup>87</sup> CTC, WIKIPEDIA, [https://en.wikipedia.org/wiki/Centralized\\_traffic\\_control](https://en.wikipedia.org/wiki/Centralized_traffic_control).

<sup>88</sup> *A Rare Peek Inside The Penn Station Central Control Room*, GOTHAMIST (July 26, 2017), <https://gothamist.com/news/a-rare-peek-inside-the-penn-station-central-control-room> (“On any given shift, one person manages all of the trains passing through Penn Station’s A-interlocking, the tangle of tracks that shuttles trains into the west end of Penn Station.”)

<sup>89</sup> PENN STATION TRACK SYSTEM, [https://media.amtrak.com/wp-content/uploads/2017/05/NYP\\_Track-Map\\_FINAL.pdf](https://media.amtrak.com/wp-content/uploads/2017/05/NYP_Track-Map_FINAL.pdf) (last visited July 22, 2024).

<sup>90</sup> *Collins Aerospace’s ARINC Rail Solutions to deliver ‘big data’ capabilities to NJ TRANSIT*, COLLINS AEROSPACE, (Dec. 6, 2019), <https://www.collinsaerospace.com/news/news/2019/12/collins-arinc-rail-solution-deliver-big-data-capabilities-nj-transit>; Collins Aerospace, *News: All aboard! . . .*, Facebook (Dec. 6, 2019), <https://www.facebook.com/collinsaerospace/posts/news-all-aboard-our-arinc-rail-solution-team-is-working-to-update-the-main-comma/10157012620672473/>.

133. Accordingly, NJ Transit's implementation of the RailwayNet<sup>SM</sup> system/AIM system and/or other same or similar system or method practices a "method for controlling railway access using a railway traffic control apparatus of a centralized railway control system configured for centralized control of traffic of a centrally controllable railway network including plural railways and a plurality of railway traffic interlocks dispersed in said plural railways constituting said railway network."

134. NJ Transit's implementation of the RailwayNet<sup>SM</sup> system/AIM system and/or other same or similar system or method provides "a user interface of the railway traffic control apparatus, including a block placing part to place a block on one or more specified track sections in any of said plural railways constituting said railway network that is managed by centralized control operation from the railway traffic control apparatus, the railway traffic control apparatus controlling, by said centralized control operation, one or more interlocks amongst the plurality of railway traffic interlocks dispersed in said plural railways constituting said railway network, to block railway traffic to the specified track sections and thereby to permit a railway field worker to enter the track sections."

135. NJ Transit's implementation of the RailwayNet<sup>SM</sup> system/AIM system and/or other same or similar system includes an enhanced employee protection functionality.<sup>91</sup>

#### Enhanced Employee Protection System (EEPS)

The Enhanced Employee Protection System (EEPS) is an electronic means of providing track protection to employees along the right of way. Prior to taking a track out of service or issuing foul time, the employee requesting to do so must possess a company issued cell phone. Through their company cell phone, the employee will be given a four digit PIN (EEPS code). When ready to relinquish the out of service limits or foul time, the protected employee must first provide the Dispatcher with their individual EEPS code. Only then will the Dispatcher be able to remove the blocking devices providing protection.

136. The RailwayNet<sup>SM</sup> system/AIM system and/or other same or similar system or

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<sup>91</sup> NJT EEPS Guidance Sheet at 1.

method, implemented by NJ Transit, that places track sections in “foul time” is a “block placing part” as recited in this claim element.

137. Specifically, FRA regulations 49 C.F.R. § 214.323 defines “foul time” as “a method of establishing working limits on controlled track in which a roadway worker is notified by the train dispatcher or control operator that *no trains will operate within a specific segment of controlled track until the roadway worker reports clear of the track.*” (Emphasis added).

138. NJ Transit’s implementation of the RailwayNet<sup>SM</sup> system/AIM system and/or other same or similar system or method has the ability to place tracks in foul time.<sup>92</sup>

#### Enhanced Employee Protection System (EEPS)

The Enhanced Employee Protection System (EEPS) is an electronic means of providing track protection to employees along the right of way. Prior to taking a track out of service or issuing foul time, the employee requesting to do so must possess a company issued cell phone. Through their company cell phone, the employee will be given a four digit PIN (EEPS code). When ready to relinquish the out of service limits or foul time, the protected employee must first provide the Dispatcher with their individual EEPS code. Only then will the Dispatcher be able to remove the blocking devices providing protection.

139. Because NJ Transit, through its implementation of the RailwayNet<sup>SM</sup> system/AIM system and/or other same or similar system or method, has the ability to place tracks in foul time, it includes “a block placing part to place a block on one or more specified track sections in any of said plural railways constituting said railway network that is managed by centralized control operation from the railway traffic control apparatus, the railway traffic control apparatus controlling, by said centralized control operation, one or more interlocks amongst the plurality of railway traffic interlocks dispersed in said plural railways constituting said railway network, to block railway traffic to the specified track sections and thereby to permit a railway field worker to enter the track sections.”

140. Moreover, in order to place a track segment in “foul time,” the system must

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<sup>92</sup> *Id.*

provide a “user interface of the railway traffic control apparatus” to permit the dispatcher to establish the blocking protection.

ROC<sup>93</sup>



PSCC<sup>94</sup>



<sup>93</sup> CASE STUDY: NEW JERSEY TRANSIT, <https://activu.com/uploads/NJ-Transit-Case-Study.pdf> (last visited July 22, 2024).

<sup>94</sup> *A Rare Peek Inside The Penn Station Central Control Room*, GOTHAMIST (July 26, 2017), <https://gothamist.com/news/a-rare-peek-inside-the-penn-station-central-control-room>.

141. The blocking protection is applied by controlling one or more interlocks.<sup>95</sup>

142. The RailwayNet<sup>SM</sup> system/AIM system and/or other same or similar system or method provides “train monitoring and control,” automatic route setting/automatic routing,” “automatic traffic regulation,” and “bulletins, authorities, and restrictions management,” as shown in the image below.<sup>96</sup> One or more of these functionalities encompasses the claimed block placing part.

### Centralized Traffic Control and SCADA

Collins designs and integrates state-of-the-art rail control solutions using our ARINC Advanced Information Management (AIM®) platform. AIM serves as an end-to-end solution for all rail control requirements, including SCADA, Centralized Traffic Control, Positive Train Control (PTC) and control center integration. Highly flexible and feature-rich, AIM enables railroads to maximize operational efficiency, cost-effectiveness and safety, all while providing an environment protected by the latest tools and techniques in cybersecurity.

#### KEY AREAS OF EXPERTISE

- |                                                       |                                                      |
|-------------------------------------------------------|------------------------------------------------------|
| • Train monitoring and control                        | • Bulletins, authorities and restrictions management |
| • Automatic train tracking                            | • Employee in Charge (EIC) terminals                 |
| • Automatic route setting/automatic routing           | • Emergency Operating Procedures (EOP)               |
| • Automatic traffic regulation and schedule deviation | • Power planning                                     |
| • Schedule management                                 | • Playback and simulation                            |
| • Integrated yard management                          | • Data acquisition                                   |
|                                                       | • Interface integration                              |

<sup>95</sup> NORAC OPERATING RULES (10TH EDITION), <https://www.hubdiv.org/docs/signaling/NORAC.pdf> (last visited July 22, 2024) at 56 (“Dispatchers or Operators controlling interlocking switches within the Working Limits must line such switches for movements within the Working Limits and must apply blocking devices to the controls of those switches. These blocking devices must not be removed without permission of the employee in charge of the Working Limits. This requirement does not relieve employees operating within the Working Limits from complying with interlocking signal indications.”). New Jersey Transit has adopted these rules. *Id.* at (physical) p. 2.

<sup>96</sup> *Intelligence-Based Rail Solutions*, Collins Aerospace, <https://web.archive.org/web/20211122013021/https://www.collinsaerospace.com/-/media/project/collinsaerospace/collinsaerospace-website/product-assets/marketing/r/rail/arinc-rail-solutions-for-passengers.pdf?rev=e7e5ddbff2de4154ba265f03e27f14d3>; see *Advanced Information Management (AIM) Rail Dispatch*, WABTEC, <https://www.wabteccorp.com/digital-intelligence/signaling-and-train-control/dispatch/advanced-information-management-aim-rail-dispatch> (last visited July 22, 2024).

143. The RailwayNet<sup>SM</sup> system/AIM system and/or other same or similar system or method, implemented by NJ Transit, is a SaaS and IaaS product that provides “full-featured network management and infrastructure, hardware, network, operating systems, and applications for fault, performance, security and configuration management.”<sup>97</sup> Additionally, RailwayNet<sup>SM</sup> system/AIM system and/or other same or similar system or method is “designed to help meet the availability standards required for PTC operations.”<sup>98</sup> Because the system is designed to support railroads to meet the PTC requirements, it should be configured to manage train movements, including placing blocks on one or more sections of railway track to prevent trains from traversing the one or more sections of railway track.

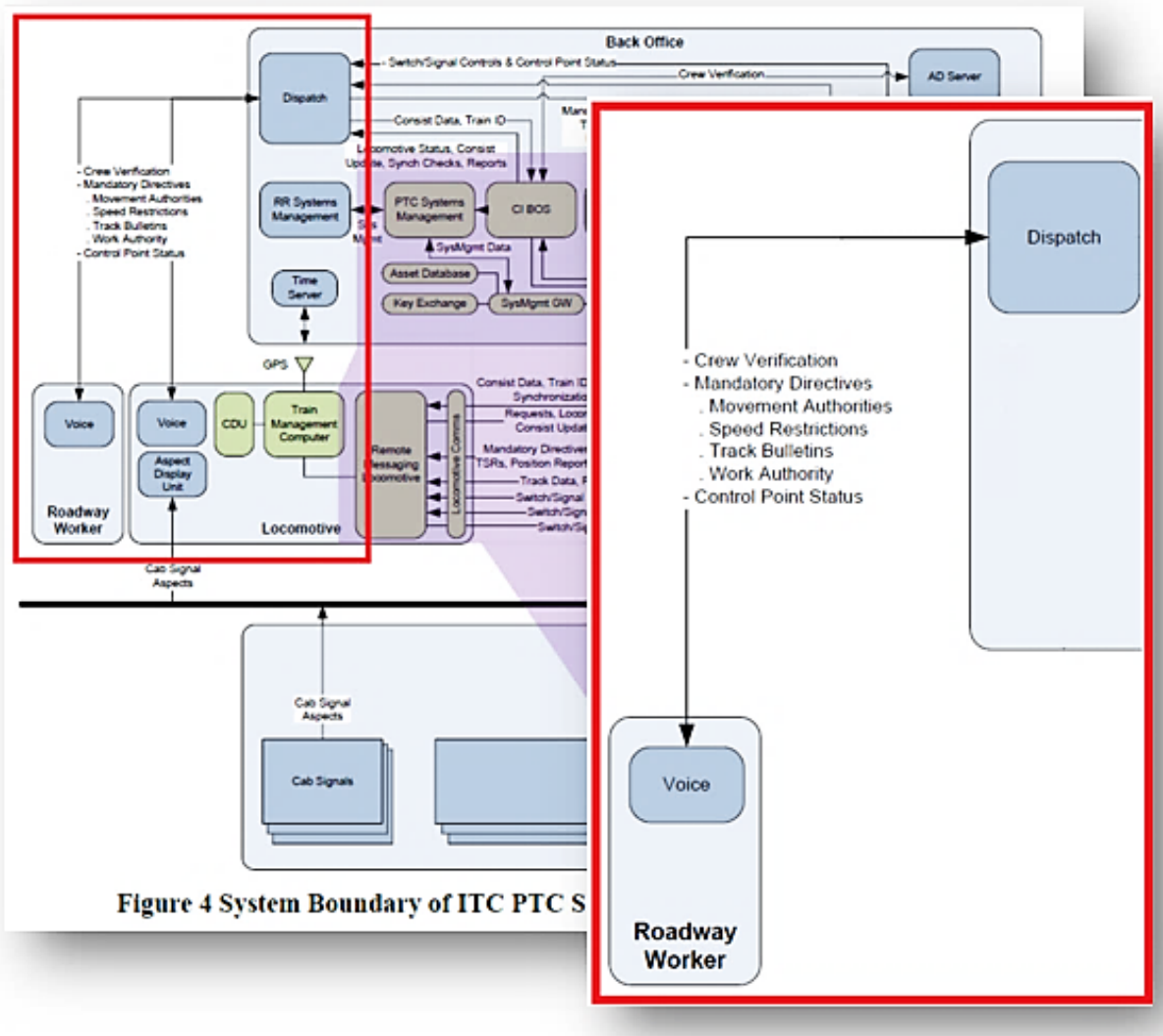
144. In order to comply with and implement FRA’s regulations (communication-based/processor-based train control technology designed to address a number of railway safety issues including train-to-train collisions, over-speed derailments, incursions into established work-zone limits, and train movement through a main-line switch that is in an improper position), RailwayNet<sup>SM</sup> system/AIM system and/or other same or similar system or method is configured to place a block on one or more sections of railway track to prevent trains from traversing the one or more sections of railway track.<sup>99</sup>

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<sup>97</sup> White Paper at 6.

<sup>98</sup> *Id.*

<sup>99</sup> Final Report at 14.



145. Accordingly, NJ Transit's implementation of the RailwayNet<sup>SM</sup> system/AIM system and/or other same or similar system or method provides "a user interface of the railway traffic control apparatus, including a block placing part to place a block on one or more specified track sections in any of said plural railways constituting said railway network that is managed by centralized control operation from the railway traffic control apparatus, the railway traffic control apparatus controlling, by said centralized control operation, one or more interlocks amongst the plurality of railway traffic interlocks dispersed in said plural railways constituting said railway network, to block railway traffic to the specified track sections and thereby to permit a railway field worker to enter the track sections."

146. NJ Transit's implementation of the RailwayNet<sup>SM</sup> system/AIM system and/or other same or similar system or method further "generat[es] a removal code, determin[es] 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[s] the removal code to the electronic contact address of the railway field worker."

147. In a report submitted to the U.S. Department of Transportation regarding the AIM/RailwayNet<sup>SM</sup> system and/or other same or similar system or method, communications to the roadway workers are generated in the "back office."<sup>100</sup> The below figure illustrates.

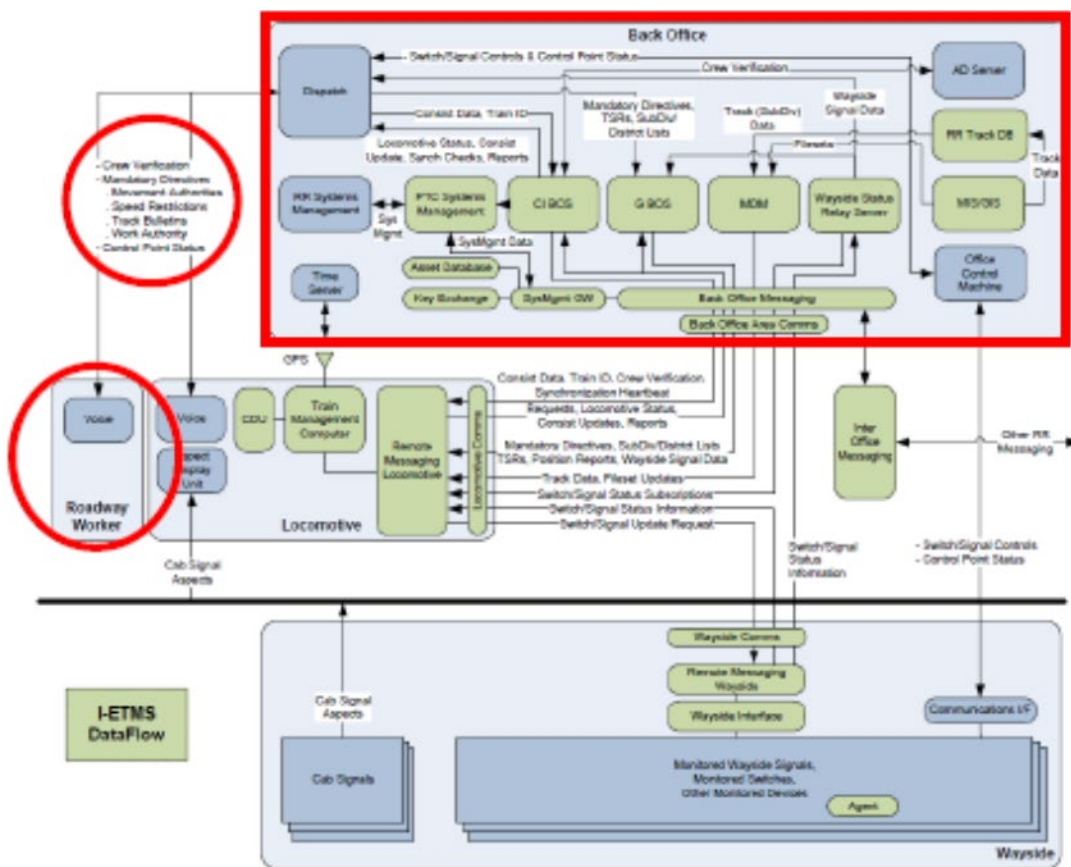


Figure 2 I-ETMS PTC Message Flows

<sup>100</sup> Final Report at 11.

148. The “back office” of NJ Transit’s implementation of the RailwayNet<sup>SM</sup> system/AIM system and/or other same or similar system or method generates a release code.<sup>101</sup>

Enhanced Employee Protection System (EEPS)

The Enhanced Employee Protection System (EEPS) is an electronic means of providing track protection to employees along the right of way. Prior to taking a track out of service or issuing foul time, the employee requesting to do so must possess a company issued cell phone. Through their company cell phone, the employee will be given a four digit PIN (EEPS code). When ready to relinquish the out of service limits or foul time, the protected employee must first provide the Dispatcher with their individual EEPS code. Only then will the Dispatcher be able to remove the blocking devices providing protection.

149. The “back office” of NJ Transit’s implementation of the RailwayNet<sup>SM</sup> system/AIM system and/or other same or similar system or method then retrieves the phone number of the employee (e.g., determines 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), which the Dispatcher must confirm the accuracy of with the employee.<sup>102</sup>

150. This release code is then transmitted to an electronic contact address accessible by the worker via their company issued cell phone.<sup>103</sup>

Enhanced Employee Protection System (EEPS)

The Enhanced Employee Protection System (EEPS) is an electronic means of providing track protection to employees along the right of way. Prior to taking a track out of service or issuing foul time, the employee requesting to do so must possess a company issued cell phone. Through their company cell phone, the employee will be given a four digit PIN (EEPS code). When ready to relinquish the out of service limits or foul time, the protected employee must first provide the Dispatcher with their individual EEPS code. Only then will the Dispatcher be able to remove the blocking devices providing protection.

151. The RailwayNet<sup>SM</sup> system/AIM system and/or other same or similar system or method, as implemented by NJ Transit, specifies providing back-office infrastructure and messaging, including “[s]torage and delivery of crew and consist information, train IDs and

<sup>101</sup> NJT EEPS Guidance Sheet at 1.

<sup>102</sup> *Id.*

<sup>103</sup> *Id.*

clearances.”<sup>104</sup> It further specified enabling ITC PTC interoperability and compliance with I-ETMS systems.<sup>105</sup> Because I-ETMS systems require communication of crew verification and employee authentication, NJ Transit maintains electronic contact addresses of the railway field workers from a rail personnel contact database. RailwayNet<sup>SM</sup> messaging functions also include: “[k]ey exchange server,” described as “[s]ecurity keys with data store.”<sup>106</sup>

A summary of the ARINC RailwayNet PTC hosting service functionality is shown below.

| Messaging functions             | Description                                                                                                                                    | Included |
|---------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------|----------|
| Back-office messaging           | Message transmission for the railroad back office                                                                                              | • *      |
| Inter-office messaging          | Message transmission between assets and railroad back offices in support of train initialization                                               | • *      |
| Systems management gateway      | Messaging systems management                                                                                                                   | •        |
| Systems management              | Remote asset monitoring and control                                                                                                            | Optional |
| Back-office area communications | Communications infrastructure at the Annapolis facility in support of railroad remote asset connectivity via cellular and internet connections | •        |
| Key exchange server             | Security keys with data store                                                                                                                  | •        |

152. Moreover, NJ Transit, for its implementation of the RailwayNet<sup>SM</sup> system/AIM system and/or other same or similar system or method, has purchased mobile devices for its railway workers and implemented a system whereby its CTC system sends authorization codes to the railway workers.<sup>107</sup>

#### Enhanced Employee Protection System (EEPS)

The Enhanced Employee Protection System (EEPS) is an electronic means of providing track protection to employees along the right of way. Prior to taking a track out of service or issuing foul time, the employee requesting to do so must possess a company issued cell phone. Through their company cell phone, the employee will be given a four digit PIN (EEPS code). When ready to relinquish the out of service limits or foul time, the protected employee must first provide the Dispatcher with their individual EEPS code. Only then will the Dispatcher be able to remove the blocking devices providing protection.

<sup>104</sup> White Paper at 7.

<sup>105</sup> See Final Report at 43.

<sup>106</sup> White Paper at 7.

<sup>107</sup> NJT EEPS Guidance Sheet at 1.

153. In order to know which mobile device to send the authorization code to, the RailwayNet<sup>SM</sup> system/AIM system and/or other same or similar system or method, as implemented by NJ Transit, must have a database storing the electronic contact address for the railway workers.

154. NJ Transit employees register with a centralized data base prior to receipt of the code.<sup>108</sup>

155. The RailwayNet<sup>SM</sup> system/AIM system and/or other same or similar system or method, implemented by NJ Transit, is a SaaS and IaaS product that provides “full-featured network management and infrastructure, hardware, network, operating systems, and applications for fault, performance, security and configuration management.”<sup>109</sup> It additionally specifies enabling ITC PTC interoperability and compliance with I-ETMS systems.<sup>110</sup>

156. The RailwayNet<sup>SM</sup> system/AIM system and/or other same or similar system or method supports I-ETMS message flows, including communications with railway workers to communicate crew verification and mandatory directives.<sup>111</sup>

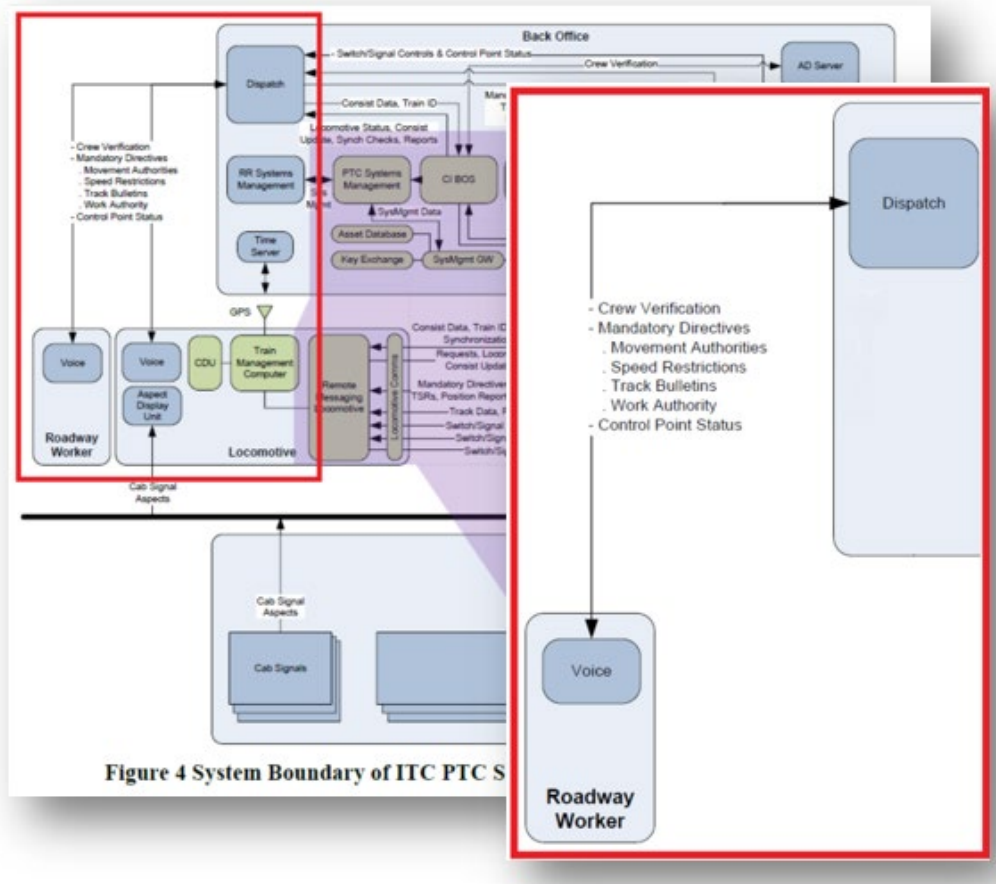
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<sup>108</sup> *Id.* (“Attached is the phone number we were given for employees to setup their company phone to be able to receive the E.E.P.S. code for Foul Time.”)

<sup>109</sup> White Paper at 6.

<sup>110</sup> Final Report at 43.

<sup>111</sup> *Id.* at 14.



157. Likewise, Wabtec acknowledges that it offers I-ETMS supported packages.<sup>112</sup>

Wabtec also advertise that RailwayNet<sup>SM</sup> “offers reliable, tailored, and scalable PTC messaging. Utilizing VHF, cellular, Wi-Fi and MPLS, RailwayNet<sup>SM</sup> PTC delivers initialization messages, crew . . . .”<sup>113</sup>

158. Furthermore, NJ Transit has directed its employees to a “Sprint Representative” to “setup their company phones to be able to receive the E.E.P.S. code,” as well as for all “company cell phone issues regarding the E.E.P.S. Code.”<sup>114</sup> Sprint, now part of T-Mobile, is a provider of

<sup>112</sup> *I-ETMS Positive Train Control (PTC) Communications Package*, WABTEC, <https://www.wabteccorp.com/digital-intelligence/signaling-and-train-control/communications/i-etms-positive-train-control-ptc-communications-package> (last visited July 22, 2024).

<sup>113</sup> *RailwayNet Positive Train Control Communication Solution*, WABTEC, <https://www.wabteccorp.com/digital-intelligence/signaling-and-train-control/communications/railwaynet-positive-train-control-communication-solution> (last visited July 22, 2024).

<sup>114</sup> Scott Spratt, *EEPS Code*, SMARTLOCAL60 (June 30, 2017), <https://utulocal60.com/2017/06/30/eeeps-code/>.

several cellular network services, including text and voice messaging services.<sup>115</sup>

159. Accordingly, NJ Transit's implementation of the RailwayNet<sup>SM</sup> system/AIM system and/or other same or similar system or method generates "a removal code, determin[es] 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."

160. NJ Transit's implementation of the RailwayNet<sup>SM</sup> system/AIM system and/or other same or similar system or method permits "the block to said one or more track sections to be removed only upon entry of the removal code by said centralized control operation from the railway traffic control apparatus."

161. NJ Transit's implementation of the RailwayNet<sup>SM</sup> system/AIM system and/or other same or similar system or method requires the entry of an authorization code in order to remove the protection from the track.<sup>116</sup>

#### Enhanced Employee Protection System (EEPS)

The Enhanced Employee Protection System (EEPS) is an electronic means of providing track protection to employees along the right of way. Prior to taking a track out of service or issuing foul time, the employee requesting to do so must possess a company issued cell phone. Through their company cell phone, the employee will be given a four digit PIN (EEPS code). When ready to relinquish the out of service limits or foul time, the protected employee must first provide the Dispatcher with their individual EEPS code. Only then will the Dispatcher be able to remove the blocking devices providing protection.

<sup>115</sup> *Sprint is now part of the family*, T-MOBILE, <https://www.t-mobile.com/brand/t-mobile-sprint-merger-updates> (last visited July 22, 2024).

<sup>116</sup> NJT EEPS Guidance Sheet at 1-2.

Prior to Releasing Foul Time

1. The employee granted the foul time must confirm with the Dispatcher their title and name, and track designation and limits being released,

AND

2. The Dispatcher must repeat this information, and the employee must confirm it,

AND THEN

3. Report to the Dispatcher their EEPS code, to allow the Dispatcher to remove protection.

Prior to Releasing Foul Time

1. The employee granted the foul time must confirm with the Dispatcher their title and name, and track designation and limits being released,

AND

2. The Dispatcher must repeat this information, and the employee must confirm it,

AND THEN

3. Report to the Dispatcher their EEPS code, to allow the Dispatcher to remove protection.

162. Moreover, the FRA has recognized that systems such as the enhanced employee protection system implemented by NJ Transit through the RailwayNet<sup>SM</sup> system/AIM system and/or other same or similar system or method complies with applicable recommended regulations (communication-based/processor-based train control technology designed to address a number of rail safety issues including train-to-train collisions, over-speed derailments, incursions into established work-zone limits, and train movement through a main-line switch that is in an improper position) in that the “dispatching system will not allow a dispatcher to release controlled track working limits until the RWIC affirmatively indicates via an electronic prompt that he or she is releasing working limits authority.”<sup>117</sup>

163. Accordingly, NJ Transit’s implementation of the RailwayNet<sup>SM</sup> system/AIM system and/or other same or similar system or method permits “the block to said one or more track sections to be removed only upon entry of the removal code by said centralized control operation from the railway traffic control apparatus.”

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<sup>117</sup> RRR at 81.

164. Therefore, NJ Transit, through its implementation of the RailwayNet<sup>SM</sup> system/AIM systems and/or other same or similar system or method has infringed and continues to infringe at least claim 19 of the '835 patent.

165. As direct and proximate result of NJ Transit's infringement of the '835 patent, Railware has been injured and has been caused significant harm and financial damages.

166. NJ Transit has also induced and continues to induce infringement of at least claim 19 of the '835 patent in violation of 35 U.S.C. § 271(b).

167. NJ Transit induces its users, and/or developers of its systems or methods to infringe at least claim 19 of the '835 patent, and does so with the specific intent, by providing instructions, directions, information, and/or knowledge on how to use its systems or methods and/or incorporate its systems or methods into other products (including both the RailwayNet<sup>SM</sup> system/AIM systems and any other same or similar systems or methods). For example, NJ Transit instructs its own dispatchers, as well as potentially dispatchers employed by other transportation providers like Amtrak<sup>118</sup>, on how to use the system to infringe.

168. NJ Transit had notice of and was aware of its infringement of the '835 patent by at least November 22, 2016. To the extent the marking requirements of 35 U.S.C. § 287 apply, NJ Transit has had constructive knowledge of the '835 patent at least since October 21, 2020. Moreover, NJ Transit knew or should have known and received notice of the '835 patent on at least the date of its reissuance, February 2, 2020. Further, NJ Transit knew or should have known and received notice of the '835 patent on at least June 15, 2022, which is the date Railware filed suit against Amtrak for infringement of the '835 patent.

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<sup>118</sup> See *A Rare Peek Inside The Penn Station Central Control Room*, GOTHAMIST (July 26, 2017), <https://gothamist.com/news/a-rare-peek-inside-the-penn-station-central-control-room>; NORTHEAST CORRIDOR ONE-YEAR IMPLEMENTATION PLAN: FISCAL YEAR 2018 (Oct. 2017), <http://nec-commission.com/app/uploads/2018/03/NEC-One-Year-Implementation-Plan-FY18.pdf>.

169. NJ Transit's continued infringement on or after any of these dates is in spite of the objectively high likelihood that its activities constitute infringement of a valid patent, and this risk was either known or so obvious that it should have been known to NJ Transit. Thus, NJ Transit's continued infringement since at least as of November 22, 2016 is willful and deliberate.

170. Railware has suffered and continues to suffer damages and irreparable harm as a result of NJ Transit's past and ongoing infringement. Unless and until NJ Transit's infringement is enjoined, Railware will continue to be damaged and irreparably harmed.

171. Railware is entitled to all remedies at law and equity including, but not limited to, an injunction against NJ Transit's infringement of the '835 patent pursuant to 35 U.S.C. § 283.

172. Railware is entitled to damages for NJ Transit's infringement of the '835 patent including, but not limited to, damages pursuant to 35 U.S.C. §§ 284 and 285.

### **THIRD CLAIM FOR RELIEF**

#### **(Infringement of the '115 patent)**

173. Railware repeats and incorporates by reference all prior allegations of this Complaint as if fully set forth herein.

174. Railware is the owner by assignment of all rights, title, and interest in and to the '115 patent.

175. The '115 patent is valid and enforceable.

176. Claim 20 of the '115 patent recites:

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:

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

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;

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;

generate a secret code associated with the at least one selected track section; and

transmit the secret code to a remote user terminal.

177. In violation of 35 U.S.C. § 271(a), NJ Transit has infringed and continues to infringe one or more claims of the '115 patent by making, using, offering for sale, selling, and/or importing in or into the United States a system or method covered by the '115 patent, including, but not limited to, at least NJ Transit's implementation and/or use of the RailwayNet<sup>SM</sup> system/AIM system and/or other same or similar system or method.<sup>119</sup>

178. NJ Transit, through its implementation and/or use of the RailwayNet<sup>SM</sup> system/AIM system and/or other same or similar system or method, infringes at least claim 20 of the '115 patent.

179. NJ Transit's implementation of the RailwayNet<sup>SM</sup> system/AIM system and/or other same or similar system or method is 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."

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<sup>119</sup> Further investigation may reveal that others of NJ Transit's products and systems also directly or indirectly infringe at least claim 20 or other claims of the '115 patent.

180. NJ Transit owns and/or operates one or more control centers, including the PSCC located at New York Penn Station and the ROC located in Kearny, NJ.<sup>120</sup> Control centers are centralized railway control systems using methods to control access to railway tracks configured for centralized control of a centrally controllable railway network including plural railways and a plurality of railway interlocks dispersed in said plural railways.

181. NJ Transit's control centers, examples of which are shown below, include a number of user terminals through which train dispatchers control the movement of trains, including by placing blocks on specified track sections:

ROC<sup>121</sup>



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<sup>120</sup> NJT EEPS Guidance Sheet at 1.

<sup>121</sup> CASE STUDY: NEW JERSEY TRANSIT, <https://activu.com/uploads/NJ-Transit-Case-Study.pdf> (last visited July 22, 2024).

PSCC<sup>122</sup>

182. NJ Transit’s control centers “control[] train movements, signals and switches and monitors the location and status of every locomotive throughout the system.”<sup>123</sup> The train dispatchers operate those switches and display signals to “remotely dispatch and monitor train movements,”<sup>124</sup> as well as to place and remove “the blocking devices providing [track] protection [to employees].”<sup>125</sup>

183. The RailwayNet<sup>SM</sup> system/AIM system and/or other same or similar system or method provides “centralized traffic control,” “train monitoring and control,” “automatic route setting/automatic routing,” “automatic traffic regulation,” and “bulletins, authorities,” and

<sup>122</sup> *A Rare Peek Inside The Penn Station Central Control Room*, GOTHAMIST (July 26, 2017), <https://gothamist.com/news/a-rare-peek-inside-the-penn-station-central-control-room>.

<sup>123</sup> *Positive Train Control: NJ Transit Celebrates Certification of Positive Train Control System*, NJTRANSIT, <https://www.njtransit.com/ptc> (last visited July 22, 2024).

<sup>124</sup> *New Jersey Transit*, ROSS & BARUZZINI, <https://www.rossbar.com/projects/new-jersey-transit/> (last visited July 22, 2024); *Job Posting: Supervisor, Train Operations*, NJTRANSIT, [https://njtransit.my.salesforce-sites.com/FCMS\\_\\_CMSLayout?jobIds=a295x000008DUcqAAG&page=CorporateDetailPage&sessionId=&jobSite=Railroad&p=Candidate&AppPage=Corporate&pageTitle=Supervisor%2C%20Train%20Operations](https://njtransit.my.salesforce-sites.com/FCMS__CMSLayout?jobIds=a295x000008DUcqAAG&page=CorporateDetailPage&sessionId=&jobSite=Railroad&p=Candidate&AppPage=Corporate&pageTitle=Supervisor%2C%20Train%20Operations) (last visited July 22, 2024).

<sup>125</sup> NJT EEPS Guidance Sheet at 1.

“restrictions management.”<sup>126</sup>

## Centralized Traffic Control and SCADA

Collins designs and integrates state-of-the-art rail control solutions using our ARINC Advanced Information Management (AIM®) platform. AIM serves as an end-to-end solution for all rail control requirements, including SCADA, Centralized Traffic Control, Positive Train Control (PTC) and control center integration. Highly flexible and feature-rich, AIM enables railroads to maximize operational efficiency, cost-effectiveness and safety, all while providing an environment protected by the latest tools and techniques in cybersecurity.

### KEY AREAS OF EXPERTISE

- |                                                       |                                                      |
|-------------------------------------------------------|------------------------------------------------------|
| • Train monitoring and control                        | • Bulletins, authorities and restrictions management |
| • Automatic train tracking                            | • Employee in Charge (EIC) terminals                 |
| • Automatic route setting/automatic routing           | • Emergency Operating Procedures (EOP)               |
| • Automatic traffic regulation and schedule deviation | • Power planning                                     |
| • Schedule management                                 | • Playback and simulation                            |
| • Integrated yard management                          | • Data acquisition                                   |
|                                                       | • Interface integration                              |

184. NJ Transit implemented the RailwayNet<sup>SM</sup> system/AIM system and/or other same or similar system or method as a SaaS and/or IaaS—a software/infrastructure as a service—product that provides “full-featured network management and infrastructure, hardware, network, operating systems, and applications for fault, performance, security and configuration management.”<sup>127</sup>

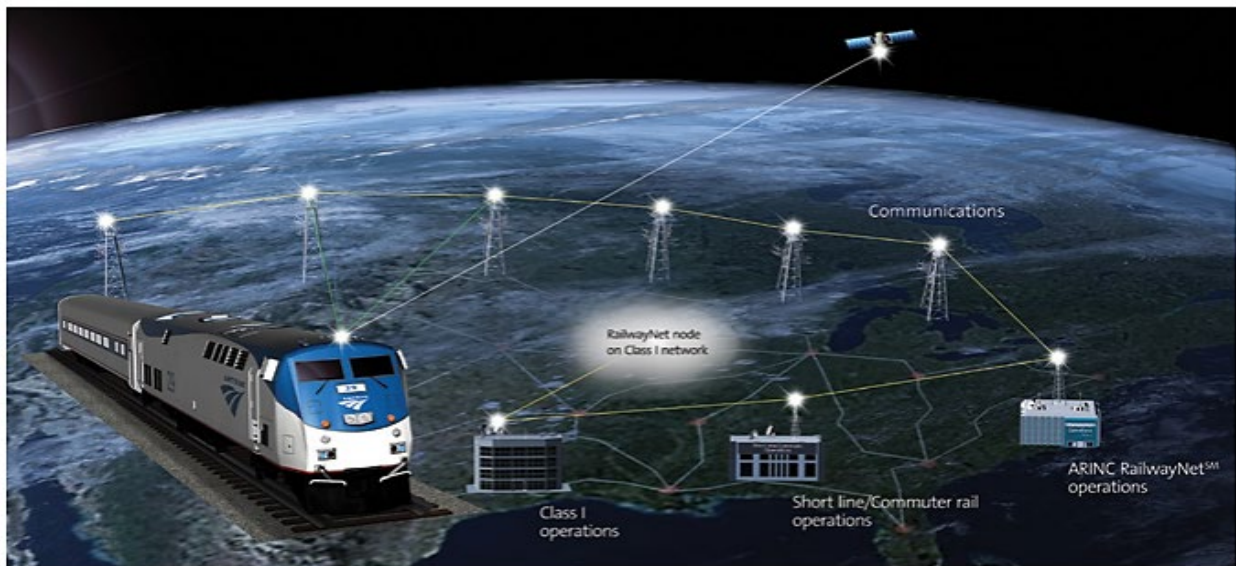
185. The RailwayNet<sup>SM</sup> system/AIM system and/or other same or similar system or

<sup>126</sup> *Intelligence-Based Rail Solutions*, Collins Aerospace, <https://web.archive.org/web/20211122013021/https://www.collinsaerospace.com/-/media/project/collinsaerospace/collinsaerospace-website/product-assets/marketing/rail/arinc-rail-solutions-for-passengers.pdf?rev=e7e5ddbff2de4154ba265f03e27f14d3>; see also *Advanced Information Management (AIM) Rail Dispatch*, WABTEC, <https://www.wabteccorp.com/digital-intelligence/signaling-and-train-control/dispatch/advanced-information-management-aim-rail-dispatch> (last visited July 22, 2024).

<sup>127</sup> White Paper at 6.

method is advertised to help facilitate the increases in safety and reliability that train control systems provide.<sup>128</sup>

186. The RailwayNet<sup>SM</sup> system/AIM system and/or other same or similar system or method, which NJ Transit uses, improves rail safety. More particularly, “[t]his system refers to communication-based/processor-based train control technology designed to address a number of rail safety issues, including train-to-train collisions, over-speed derailments, incursions into established work-zone limits, and train movement through a main-line switch that is in an improper position.”<sup>129</sup>



187. The RailwayNet<sup>SM</sup> system/AIM system and/or other same or similar system or method was implemented throughout NJ Transit’s routes.<sup>130</sup>

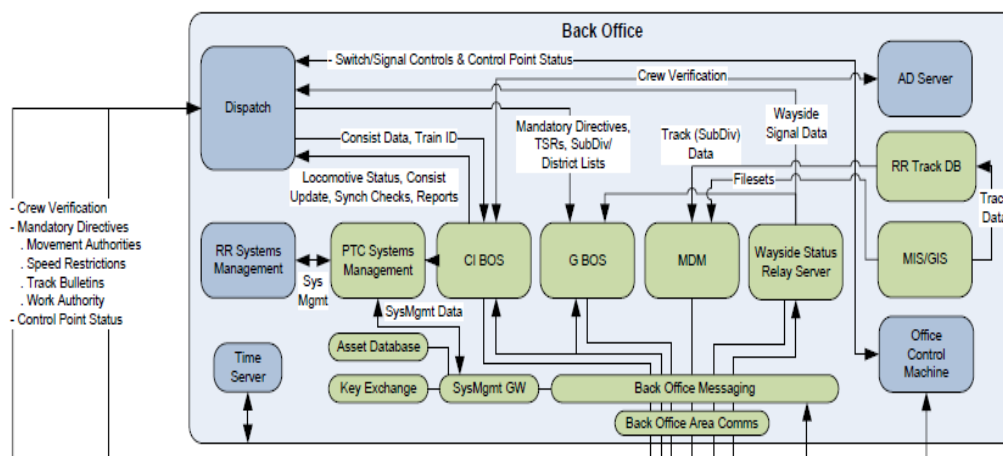
<sup>128</sup> See, e.g., *Amtrak signs nationwide contract for Rockwell Collins’ ARINC RailwayNet<sup>SM</sup> Positive Train Control service*, COLLINS AEROSPACE (Sep. 6, 2017), [https://rockwellcollins.com/-/media/Files/Unsecure/Services-And-Support/Information-Management/ARINC-Rail/RC\\_Amtrak-Press-Release\\_09-06-17.ashx](https://rockwellcollins.com/-/media/Files/Unsecure/Services-And-Support/Information-Management/ARINC-Rail/RC_Amtrak-Press-Release_09-06-17.ashx); *RailwayNet Positive Train Control Communication Solution*, WABTEC, <https://www.wabteccorp.com/digital-intelligence/signaling-and-train-control/communications/railwaynet-positive-train-control-communication-solution> (last visited July 22, 2024).

<sup>129</sup> White Paper at 3.

<sup>130</sup> *Collins Aerospace’s ARINC Rail Solutions to deliver ‘big data’ capabilities to NJ TRANSIT*, COLLINS AEROSPACE, (Dec. 6, 2019), <https://www.collinsaerospace.com/news/news/2019/12/collins-arinc-rail-solution-deliver-big-data-capabilities-nj-transit>.

188. As explained below, the RailwayNet<sup>SM</sup> system/AIM system and/or other same or similar system or method is a hosted network, messaging and application platform, designed to assist operators in meeting the requirements mandated by the Rail Safety Improvement Act of 2008 (the “Act”). The Act directs the Federal Railroad Administration (FRA) to mandate new regulations focused on railroad safety. When used in conjunction with the operator’s train control infrastructure, RailwayNet<sup>SM</sup> helps facilitate the increases in safety and reliability.<sup>131</sup>

189. The RailwayNet<sup>SM</sup> system/AIM system and/or other same or similar system or method includes an “integrations server and software” that “provides connectivity between the railroad IT systems and the hosted back-office components.”<sup>132</sup> The integration server provides an interface with various system components.



<sup>131</sup> See, e.g., *Amtrak signs nationwide contract for Rockwell Collins' ARINC RailwayNet<sup>SM</sup> Positive Train Control service*, COLLINS AEROSPACE (Sep. 6, 2017), [https://rockwellcollins.com/-/media/Files/Unsecure/Services-And-Support/Information-Management/ARINC-Rail/RC\\_Amtrak-Press-Release\\_09-06-17.ashx](https://rockwellcollins.com/-/media/Files/Unsecure/Services-And-Support/Information-Management/ARINC-Rail/RC_Amtrak-Press-Release_09-06-17.ashx).

<sup>132</sup> See White Paper at 8 (illustrating “AIM<sup>®</sup> integration server”).

**AIM® integration server**

The ARINC RailwayNet integrations server and software provides connectivity between the railroad IT systems and the hosted back-office components. The functions of this application include:

- › Interface with customer's IT gateway
- › Interface with back office
- › Manage crew authentication through the customer's IT gateway
- › Functions to assign train ID to trains based on the clearance number
- › Functions to manage train consist through the customer's IT gateway
- › Functions to track, display, and store events and alarms

## Centralized Traffic Control and SCADA

Collins designs and integrates state-of-the-art rail control solutions using our ARINC Advanced Information Management (AIM®) platform. AIM serves as an end-to-end solution for all rail control requirements, including SCADA, Centralized Traffic Control, Positive Train Control (PTC) and control center integration. Highly flexible and feature-rich, AIM enables railroads to maximize operational efficiency, cost-effectiveness and safety, all while providing an environment protected by the latest tools and techniques in cybersecurity.

### KEY AREAS OF EXPERTISE

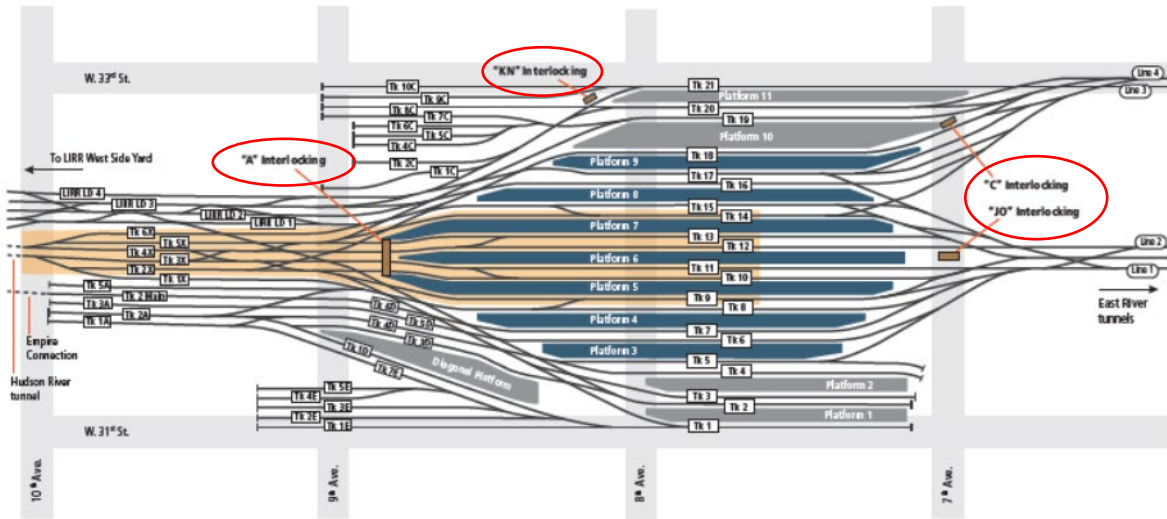
- |                                                       |                                                      |
|-------------------------------------------------------|------------------------------------------------------|
| • Train monitoring and control                        | • Bulletins, authorities and restrictions management |
| • Automatic train tracking                            | • Employee in Charge (EIC) terminals                 |
| • Automatic route setting/automatic routing           | • Emergency Operating Procedures (EOP)               |
| • Automatic traffic regulation and schedule deviation | • Power planning                                     |
| • Schedule management                                 | • Playback and simulation                            |
| • Integrated yard management                          | • Data acquisition                                   |
|                                                       | • Interface integration                              |

190. The RailwayNet<sup>SM</sup> system/AIM system and/or other same or similar system or method, as implemented by NJ Transit, provides the network connections and office applications required to exchange critical information among railroads and their partner short line commuter railroads. It is available on a subscription basis as hosted SaaS (software as a service) and IaaS (infrastructure as a service) solutions, and messaging from the back office to the locomotive through VHF, cellular, and Wi-Fi is also available.<sup>133</sup>

191. The RailwayNet<sup>SM</sup> system/AIM system and/or other same or similar system or method, as implemented by NJ Transit, further controls plural railways and a plurality of railway traffic interlocks. Specifically, Centralized Train Control systems, such as that employed by NJ

<sup>133</sup> *New from Rockwell Collins: Shared-network PTC platform*, RAILWAY AGE 14 (July 2016), [https://issuu.com/railwayage/docs/july\\_2016\\_railway\\_age](https://issuu.com/railwayage/docs/july_2016_railway_age); *RailwayNet Positive Train Control Communication Solution*, WABTEC, <https://www.wabteccorp.com/digital-intelligence/signaling-and-train-control/communications/railwaynet-positive-train-control-communication-solution> (last visited July 22, 2024).

Transit and its implementation of the RailwayNet<sup>SM</sup> system/AIM and/or other similar system “consists of a centralized train dispatcher’s office that controls railroad interlocking and traffic flows in portions of the rail system designated as CTC territory.”<sup>134</sup> Train dispatchers in the control center have control over all interlockings at NJ Transit.<sup>135</sup> For example, the below image illustrates the interlocks that are controlled through PSCC.<sup>136</sup>



192. NJ Transit implemented the RailwayNet<sup>SM</sup> system/AIM system and/or other same or similar system or method—a hosted network, messaging and application platform as amended—on throughout NJ Transit’s routes.

193. Accordingly, NJ Transit’s implementation of the RailwayNet<sup>SM</sup> system/AIM system and/or other same or similar system or method is 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.”

<sup>134</sup> CTC, WIKIPEDIA, [https://en.wikipedia.org/wiki/Centralized\\_traffic\\_control](https://en.wikipedia.org/wiki/Centralized_traffic_control).

<sup>135</sup> *A Rare Peek Inside The Penn Station Central Control Room*, GOTHAMIST (July 26, 2017), <https://gothamist.com/news/a-rare-peek-inside-the-penn-station-central-control-room> (“On any given shift, one person manages all of the trains passing through Penn Station's A-interlocking, the tangle of tracks that shuttles trains into the west end of Penn Station.”)

<sup>136</sup> PENN STATION TRACK SYSTEM, [https://media.amtrak.com/wp-content/uploads/2017/05/NYP\\_Track-Map\\_FINAL.pdf](https://media.amtrak.com/wp-content/uploads/2017/05/NYP_Track-Map_FINAL.pdf) (last visited July 22, 2024).

194. NJ Transit’s implementation of the RailwayNet<sup>SM</sup> system/AIM system and/or other same or similar system or method includes “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.”

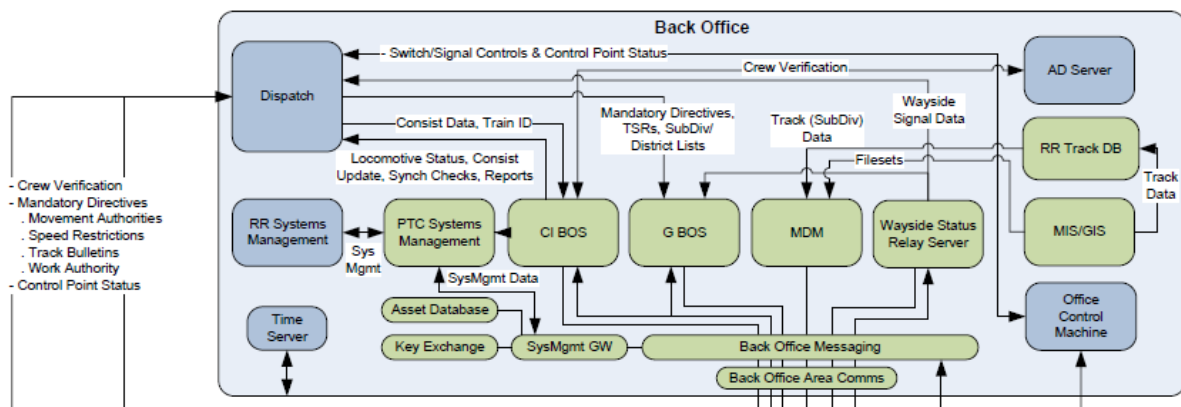
195. The RailwayNet<sup>SM</sup> system/AIM system and/or other same or similar system or method, which NJ Transit uses, improves rail safety. More specifically, “[t]his system refers to **communication-based/processor-based** train control technology designed to address a number of rail safety issues, including train-to-train collisions, over-speed derailments, incursions into established work-zone limits, and train movement through a main-line switch that is in an improper position.”<sup>137</sup>

196. The RailwayNet<sup>SM</sup> system/AIM system and/or other same or similar system or method includes an “integrations server and software” that “provides connectivity between the railroad IT systems and the hosted back-office components.”<sup>138</sup> The integration server provides an interface with various system components.

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<sup>137</sup> White Paper at 3 (emphasis added).

<sup>138</sup> See White Paper at 8 (illustrating “AIM<sup>®</sup> integration server”).



#### AIM® integration server

The ARINC RailwayNet integrations server and software provides connectivity between the railroad IT systems and the hosted back-office components. The functions of this application include:

- › Interface with customer's IT gateway
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## Centralized Traffic Control and SCADA

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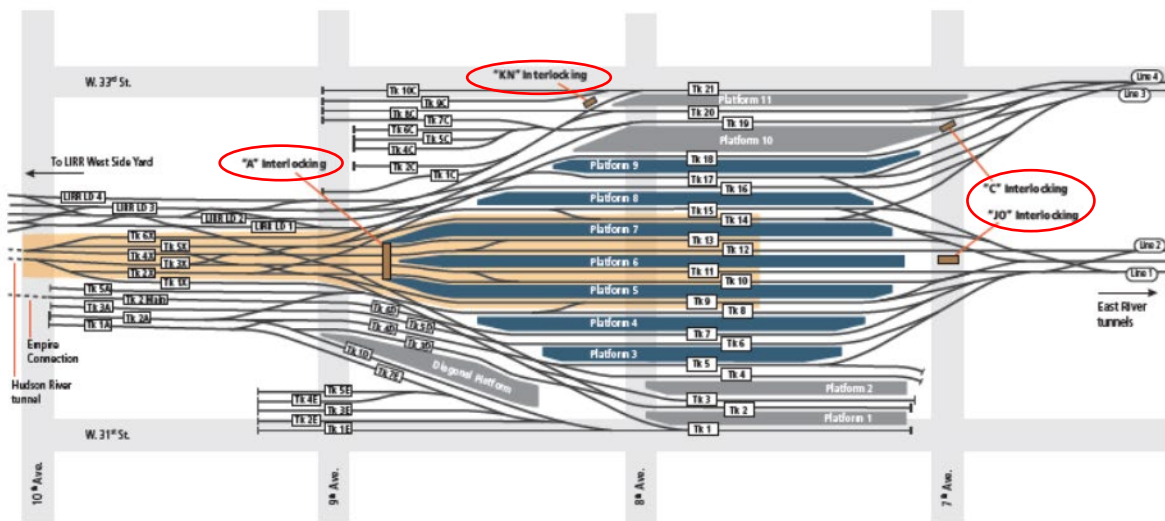
#### KEY AREAS OF EXPERTISE

- |                                                       |                                                      |
|-------------------------------------------------------|------------------------------------------------------|
| • Train monitoring and control                        | • Bulletins, authorities and restrictions management |
| • Automatic train tracking                            | • Employee in Charge (EIC) terminals                 |
| • Automatic route setting/automatic routing           | • Emergency Operating Procedures (EOP)               |
| • Automatic traffic regulation and schedule deviation | • Power planning                                     |
| • Schedule management                                 | • Playback and simulation                            |
| • Integrated yard management                          | • Data acquisition                                   |
|                                                       | • Interface integration                              |

197. The RailwayNet<sup>SM</sup> system/AIM system and/or other same or similar system or method, as implemented by NJ Transit, provides the network connections and office applications required to exchange critical information among railroads. It is available on a subscription basis as hosted SaaS (software as a service) and IaaS (infrastructure as a service) solutions, and messaging from the back office to the locomotive through VHF, cellular, and Wi-Fi is also

available.<sup>139</sup>

198. The RailwayNet<sup>SM</sup> system/AIM system and/or other same or similar system or method, as implemented by NJ Transit, further controls plural railways and a plurality of railway traffic interlocks. Specifically, Centralized Train Control systems, such as that employed by NJ Transit and its implementation of the RailwayNet<sup>SM</sup> system/AIM and/or other same or similar system or method “consists of a centralized train dispatcher’s office that controls railroad interlocking and traffic flows in portions of the rail system designated as CTC territory.”<sup>140</sup> Train dispatchers in the control center have control over all interlockings on NJ Transit’s railroads.<sup>141</sup> The below image illustrates the interlocks that are controlled through PSCC.<sup>142</sup>



199. NJ Transit implemented the RailwayNet<sup>SM</sup> system/AIM system and/or other same

<sup>139</sup> New from Rockwell Collins: Shared-network PTC platform, RAILWAY AGE 14 (July 2016), [https://issuu.com/railwayage/docs/july\\_2016\\_railway\\_age](https://issuu.com/railwayage/docs/july_2016_railway_age); *RailwayNet Positive Train Control Communication Solution*, WABTEC, <https://www.wabteccorp.com/digital-intelligence/signaling-and-train-control/communications/railwaynet-positive-train-control-communication-solution> (last visited July 22, 2024).

<sup>140</sup> CTC, WIKIPEDIA, [https://en.wikipedia.org/wiki/Centralized\\_traffic\\_control](https://en.wikipedia.org/wiki/Centralized_traffic_control).

<sup>141</sup> *A Rare Peek Inside The Penn Station Central Control Room*, GOTHAMIST (July 26, 2017), <https://gothamist.com/news/a-rare-peek-inside-the-penn-station-central-control-room> (“On any given shift, one person manages all of the trains passing through Penn Station’s A-interlocking, the tangle of tracks that shuttles trains into the west end of Penn Station.”)

<sup>142</sup> PENN STATION TRACK SYSTEM, [https://media.amtrak.com/wp-content/uploads/2017/05/NYP\\_Track-Map\\_FINAL.pdf](https://media.amtrak.com/wp-content/uploads/2017/05/NYP_Track-Map_FINAL.pdf) (last visited July 22, 2024).

or similar system or method—a hosted network, messaging and application platform as amended—throughout NJ Transit’s routes.<sup>143</sup>

200. The RailwayNet<sup>SM</sup> system/AIM system and/or other same or similar system or method, as implemented by NJ Transit, has the ability to take trakes out of service and/or place track sections in “foul time” as an example of a “processor controlling, by said centralized control operation one or more interlocks dispersed in said plural railways of said railway network, to block railway traffic to one or more specified track sections” as recited in this claim element.

201. Specifically, FRA regulations 49 C.F.R. § 214.323 defines “foul time” as “a method of establishing working limits on controlled track in which a roadway worker is notified by the train dispatcher or control operator that *no trains will operate within a specific segment of controlled track until the roadway worker reports clear of the track.*” (Emphasis added).

202. NJ Transit’s implementation of the RailwayNet<sup>SM</sup> system/AIM system and/or other same or similar system or method has the ability to take tracks out of service and/or place tracks in foul time.<sup>144</sup>

#### Enhanced Employee Protection System (EEPS)

The Enhanced Employee Protection System (EEPS) is an electronic means of providing track protection to employees along the right of way. Prior to taking a track out of service or issuing foul time, the employee requesting to do so must possess a company issued cell phone. Through their company cell phone, the employee will be given a four digit PIN (EEPS code). When ready to relinquish the out of service limits or foul time, the protected employee must first provide the Dispatcher with their individual EEPS code. Only then will the Dispatcher be able to remove the blocking devices providing protection.

203. Because NJ Transit, through its implementation of the RailwayNet<sup>SM</sup> system/AIM

<sup>143</sup>Collins Aerospace’s ARINC Rail Solutions to deliver ‘big data’ capabilities to NJ TRANSIT, COLLINS AEROSPACE, (Dec. 6, 2019), <https://www.collinsaerospace.com/news/news/2019/12/collins-arinc-rail-solution-deliver-big-data-capabilities-nj-transit>; Collins Aerospace, *News: All aboard!* . . . , Facebook (Dec. 6, 2019), <https://www.facebook.com/collinsaerospace/posts/news-all-aboard-our-arinc-rail-solution-team-is-working-to-update-the-main-comma/10157012620672473/>.

<sup>144</sup> NJT EEPS Guidance Sheet at 1.

system and/or other same or similar system or method, has the ability to take tracks out of service and/or place tracks in foul time, it includes the capability to “block railway traffic to one or more specified track sections.”

204. Moreover, in order to place a track segment in “foul time,” the system must contain “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 permit the dispatcher to establish the blocking protection.

205. NJ Transit owns and/or operates one or more control centers, including the PSCC located at New York Penn Station and the ROC located in Kearny, NJ.<sup>145</sup> Control centers are centralized railway control systems using methods to control access to railway tracks configured for centralized control of traffic of a centrally controllable railway network including plural railways and a plurality of railway traffic interlocks dispersed in said plural railways constituting said railway network.

206. NJ Transit’s control centers, examples of which are shown below, include a number of user terminals through which train dispatchers control the movement of trains, including by placing blocks on specified track sections:

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<sup>145</sup> *Id.*

ROC<sup>146</sup>



PSCC<sup>147</sup>



NJ Transit's a control centers "controls train movements, signals and switches and monitors the location and status of every locomotive throughout the system."<sup>148</sup> The train dispatchers operate

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<sup>146</sup> CASE STUDY: NEW JERSEY TRANSIT, <https://activu.com/uploads/NJ-Transit-Case-Study.pdf> (last visited July 22, 2024).

<sup>147</sup> *A Rare Peek Inside The Penn Station Central Control Room*, GOTHAMIST (July 26, 2017), <https://gothamist.com/news/a-rare-peek-inside-the-penn-station-central-control-room>.

<sup>148</sup> *Positive Train Control: NJ Transit Celebrates Certification of Positive Train Control System*, NJTRANSIT, <https://www.njtransit.com/ptc> (last visited July 22, 2024).

those switches and display signals to “remotely dispatch and monitor train movements,”<sup>149</sup> as well as to place and remove “the blocking devices providing [track] protection [to employees].”<sup>150</sup>

207. The RailwayNet<sup>SM</sup> system/AIM system and/or other same or similar system or method provides “train monitoring and control,” automatic route setting/automatic routing,” “automatic traffic regulation,” and “bulletins, authorities, and restrictions management,” as shown, for example, in the image below.<sup>151</sup> One or more of these functionalities encompasses the claimed “block railway traffic” part.

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#### KEY AREAS OF EXPERTISE

- |                                                       |                                                      |
|-------------------------------------------------------|------------------------------------------------------|
| • Train monitoring and control                        | • Bulletins, authorities and restrictions management |
| • Automatic train tracking                            | • Employee in Charge (EIC) terminals                 |
| • Automatic route setting/automatic routing           | • Emergency Operating Procedures (EOP)               |
| • Automatic traffic regulation and schedule deviation | • Power planning                                     |
| • Schedule management                                 | • Playback and simulation                            |
| • Integrated yard management                          | • Data acquisition                                   |
|                                                       | • Interface integration                              |

<sup>149</sup> *New Jersey Transit*, ROSS & BARUZZINI, <https://www.rossbar.com/projects/new-jersey-transit/> (last visited July 22, 2024); *Job Posting: Supervisor, Train Operations*, NJTRANSIT, [https://njtransit.my.salesforce-sites.com/FCMS\\_\\_CMSLayout?jobIds=a295x000008DUcqAAG&page=CorporateDetailPage&sessionId=&jobSite=Railroad&p=Candidate&ApplPage=Corporate&pageTitle=Supervisor%2C%20Train%20Operations](https://njtransit.my.salesforce-sites.com/FCMS__CMSLayout?jobIds=a295x000008DUcqAAG&page=CorporateDetailPage&sessionId=&jobSite=Railroad&p=Candidate&ApplPage=Corporate&pageTitle=Supervisor%2C%20Train%20Operations) (last visited July 22, 2024).

<sup>150</sup> NJT EEPs Guidance Sheet at 1.

<sup>151</sup> *Intelligence-Based Rail Solutions*, Collins Aerospace, <https://web.archive.org/web/20211122013021/https://www.collinsaerospace.com/-/media/project/collinsaerospace/collinsaerospace-website/product-assets/marketing/r/rail/arinc-rail-solutions-for-passengers.pdf?rev=e7e5ddbff2de4154ba265f03e27f14d3>; *Advanced Information Management (AIM) Rail Dispatch*, WABTEC, <https://www.wabteccorp.com/digital-intelligence/signaling-and-train-control/dispatch/advanced-information-management-aim-rail-dispatch> (last visited July 22, 2024).

208. The RailwayNet<sup>SM</sup> system/AIM system and/or other same or similar system or method, as implemented by NJ Transit, is a SaaS and IaaS product that provides “full-featured network management and infrastructure, hardware, network, operating systems, and applications for fault, performance, security and configuration management.”<sup>152</sup> Additionally, the RailwayNet<sup>SM</sup> system/AIM system and/or other same or similar system or method is “designed to help meet the availability standards required for PTC operations.”<sup>153</sup> Because the system is designed to support railroads to meet the PTC requirements, it should be configured to manage train movements, including placing blocks on one or more sections of railway track to prevent trains from traversing the one or more sections of railway track.

209. In order to comply with and implement FRA’s recommended regulations (communication-based/processor-based train control technology designed to address a number of railway safety issues including train-to-train collisions, over-speed derailments, incursions into established work-zone limits, and train movement through a main-line switch that is in an improper position), the RailwayNet<sup>SM</sup> system/AIM system and/or other same or similar system or method is configured to place a block on one or more specified sections of railway track to prevent trains from traversing the one or more sections of railway track.<sup>154</sup>

210. Accordingly, NJ Transit’s implementation of the RailwayNet<sup>SM</sup> system/AIM system and/or other same or similar system or method includes “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

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<sup>152</sup> White Paper at 6.

<sup>153</sup> *Id.*

<sup>154</sup> See Final Report at 14; see also *NEC One-Year Plan 2019* at 233.

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.”

211. NJ Transit’s implementation of the RailwayNet<sup>SM</sup> system/AIM system and/or other same or similar system or method further includes “a memory device storing computer-executable instructions.”

212. The RailwayNet<sup>SM</sup> system/AIM system and/or other same or similar system or method, which NJ Transit uses, improves rail safety. More specifically, “[t]his system refers to communication-based/processor-based train control technology designed to address a number of rail safety issues, including train-to-train collisions, over-speed derailments, incursions into established work-zone limits, and train movement through a main-line switch that is in an improper position.”<sup>155</sup>



213. Because NJ Transit’s implementation of the RailwayNet<sup>SM</sup> system/AIM system

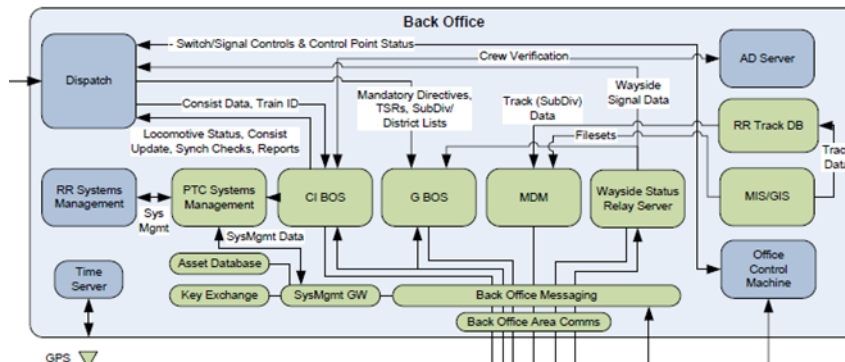
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<sup>155</sup> White Paper at 3.

and/or other same or similar system or method is a processor-based system, there must be a memory device configured to store computer-executable instructions (*e.g.*, code) for the processor to execute.<sup>156</sup>

214. The RailwayNet<sup>SM</sup> system/AIM system and/or other same or similar system or method, implemented by NJ Transit is a SaaS and IaaS product that provides “full-featured network management and infrastructure, hardware, network, operating systems, and applications for fault, performance, security and configuration management.”<sup>157</sup>

215. Moreover, NJ Transit’s implementation of the RailwayNet<sup>SM</sup> system/AIM system and/or other same or similar system or method utilizes a “back office” which contains numerous databases and servers, which are memory devices used for storing computer-executable instructions related functions performed by the back office.<sup>158</sup>



216. NJ Transit utilizes a memory device to store the computer-executable instructions for its enhanced employee protection functionality.

217. Accordingly, NJ Transit’s implementation of the RailwayNet<sup>SM</sup> system/AIM system and/or other same or similar system or method includes “a memory device storing computer-executable instructions.”

<sup>156</sup> *Id.*

<sup>157</sup> *Id.* at 6.

<sup>158</sup> Final Report at 14.

218. NJ Transit's implementation of the RailwayNet<sup>SM</sup> system/AIM system and/or other same or similar system or method includes a railway control apparatus that executes computer-executable instructions to "receive a selection of at least one track section amongst the plurality of track sections."

219. NJ Transit's implementation of the RailwayNet<sup>SM</sup> system/AIM system and/or other same or similar system or method is a CTC system which, by definition, is configured for centralized control of traffic of a centrally controllable railway network including plural railways and a plurality of railway traffic interlocks dispersed in the plural railways and controls access to the railway tracks.<sup>159</sup>

220. Further, NJ Transit's implementation of the RailwayNet<sup>SM</sup> system/AIM system and/or other similar system can place tracks in "foul time."<sup>160</sup>

#### Enhanced Employee Protection System (EEPS)

The Enhanced Employee Protection System (EEPS) is an electronic means of providing track protection to employees along the right of way. Prior to taking a track out of service or issuing foul time, the employee requesting to do so must possess a company issued cell phone. Through their company cell phone, the employee will be given a four digit PIN (EEPS code). When ready to relinquish the out of service limits or foul time, the protected employee must first provide the Dispatcher with their individual EEPS code. Only then will the Dispatcher be able to remove the blocking devices providing protection.

221. Foul time is defined as "a method of establishing working limits on controlled track in which a roadway worker is notified by the train dispatcher or control operator that no trains will operate within a specific segment of controlled track until the roadway worker reports

<sup>159</sup> See discussion, *supra*; see also *Positive Train Control: NJ Transit Celebrates Certification of Positive Train Control System*, NJTRANSIT, <https://www.njtransit.com/ptc> (last visited July 22, 2024); *New Jersey Transit*, ROSS & BARUZZINI, <https://www.rossbar.com/projects/new-jersey-transit/> (last visited July 22, 2024); *Job Posting: Supervisor, Train Operations*, NJTRANSIT, [https://njtransit.my.salesforce-sites.com/FCMS\\_\\_CMSLayout?jobIds=a295x000008DUcqAAG&page=CorporateDetailPage&sessionId=&jobSite=Railroad&p=Candidate&AppPage=Corporate&pageTitle=Supervisor%2C%20Train%20Operations](https://njtransit.my.salesforce-sites.com/FCMS__CMSLayout?jobIds=a295x000008DUcqAAG&page=CorporateDetailPage&sessionId=&jobSite=Railroad&p=Candidate&AppPage=Corporate&pageTitle=Supervisor%2C%20Train%20Operations) (last visited July 22, 2024); CTC, WIKIPEDIA, [https://en.wikipedia.org/wiki/Centralized\\_traffic\\_control](https://en.wikipedia.org/wiki/Centralized_traffic_control). <https://gothamist.com/news/a-rare-peek-inside-the-penn-station-central-control-room> ("On any given shift, one person manages all of the trains passing through Penn Station's A-interlocking, the tangle of tracks that shuttles trains into the west end of Penn Station.")

<sup>160</sup> NJT EEPS Guidance Sheet at 1.

clear of the track.” 49 C.F.R. Part 214.7. The “specified segments” referred to in the rule are the “selection of at least one track section amongst the plurality of track sections” referred to in this claim element.

222. In NJ Transit’s implementation of the RailwayNet<sup>SM</sup> system/AIM system and/or other similar system or method, a dispatcher can take sections of track out of service and/or put it in foul time.<sup>161</sup>

223. In order for the dispatcher to complete these functions, the system must be able to receive a selection of at least one track section amongst the plurality of track sections.<sup>162</sup>

224. Accordingly, NJ Transit’s implementation of the RailwayNet<sup>SM</sup> system/AIM system and/or other same or similar system or method includes a railway control apparatus that executes computer-executable instructions to “receive a selection of at least one track section amongst the plurality of track sections.”

225. NJ Transit’s implementation of the RailwayNet<sup>SM</sup> system/AIM system and/or other same or similar system or method includes a railway control apparatus that executes computer-executable instructions to “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.”

226. Train dispatchers in the control center have control over all interlockings on NJ

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<sup>161</sup> *New Jersey Transit*, ROSS & BARUZZINI, <https://www.rossbar.com/projects/new-jersey-transit/> (last visited July 22, 2024); *Job Posting: Supervisor, Train Operations*, NJTRANSIT, [https://njtransit.my.salesforce-sites.com/FCMS\\_\\_CMSLayout?jobIds=a295x000008DUcqAAG&page=CorporateDetailPage&sessionId=&jobSite=Railroad&p=Candidate&AppPage=Corporate&pageTitle=Supervisor%2C%20Train%20Operations](https://njtransit.my.salesforce-sites.com/FCMS__CMSLayout?jobIds=a295x000008DUcqAAG&page=CorporateDetailPage&sessionId=&jobSite=Railroad&p=Candidate&AppPage=Corporate&pageTitle=Supervisor%2C%20Train%20Operations) (last visited July 22, 2024); NJT EEPs Guidance Sheet at 1.

<sup>162</sup> *Cf.* 49 C.F.R. § 214.323 (Foul time) (“Working limits established on controlled track through the use of foul time procedures shall comply with the following requirements: . . . (c) The train dispatcher or control operator shall not permit the movement of trains or other on-track equipment into working limits protected by foul time until the roadway worker in charge who obtained the foul time has reported clear of the track.”)

Transit's railroads.<sup>163</sup>

227. The RailwayNet<sup>SM</sup> system/AIM system and/or other same or similar system or method, as implemented by NJ Transit, that takes tracks out of service and/or places track sections in “foul time” “transmit[s] 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.” as recited in this claim element.

228. Specifically, FRA regulations 49 C.F.R. § 214.323 defines “foul time” as “a method of establishing working limits on controlled track in which a roadway worker is notified by the train dispatcher or control operator that *no trains will operate within a specific segment of controlled track until the roadway worker reports clear of the track.*” (Emphasis added).

229. NJ Transit's implementation of the RailwayNet<sup>SM</sup> system/AIM system and/or other same or similar system or method has the ability to take tracks out of service and/or place tracks in foul time.<sup>164</sup>

#### Enhanced Employee Protection System (EEPS)

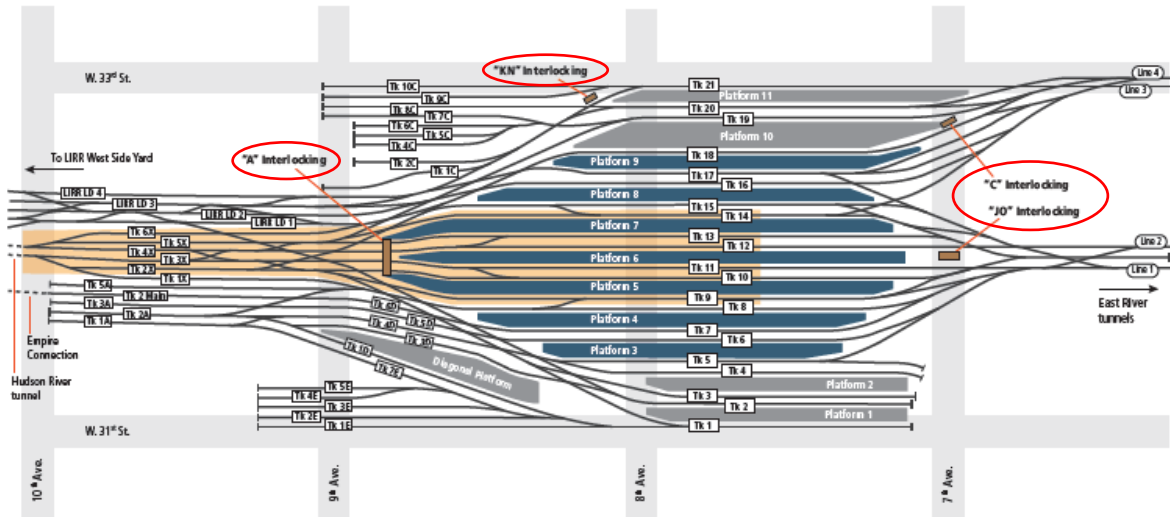
The Enhanced Employee Protection System (EEPS) is an electronic means of providing track protection to employees along the right of way. Prior to taking a track out of service or issuing foul time, the employee requesting to do so must possess a company issued cell phone. Through their company cell phone, the employee will be given a four digit PIN (EEPS code). When ready to relinquish the out of service limits or foul time, the protected employee must first provide the Dispatcher with their individual EEPS code. Only then will the Dispatcher be able to remove the blocking devices providing protection.

230. Because NJ Transit, through its implementation of the RailwayNet<sup>SM</sup> system/AIM system and/or other same or similar system or method, has the ability to place tracks in foul time, it includes an ability to place blocks.

<sup>163</sup> <https://gothamist.com/news/a-rare-peek-inside-the-penn-station-central-control-room> (“On any given shift, one person manages all of the trains passing through Penn Station's A-interlocking, the tangle of tracks that shuttles trains into the west end of Penn Station.”)

<sup>164</sup> NJT EEPS Guidance Sheet at 1.

231. NJ Transit places blocks by transmitting a block signal to the corresponding interlock associated with the at least one selected track section. For example, The below image illustrates the interlocks that are controlled through PSCC.<sup>165</sup>



232. The RailwayNet<sup>SM</sup> system/AIM system and/or other same or similar system or method provides “train monitoring and control,” “automatic route setting/automatic routing,” “automatic traffic regulation,” and “bulletins, authorities, and restrictions management.”<sup>166</sup> One or more of these functionalities encompass the claimed ability to place blocks.

<sup>165</sup> PENN STATION TRACK SYSTEM, [https://media.amtrak.com/wp-content/uploads/2017/05/NYP\\_Track-Map\\_FINAL.pdf](https://media.amtrak.com/wp-content/uploads/2017/05/NYP_Track-Map_FINAL.pdf) (last visited July 22, 2024).

<sup>166</sup> *Intelligence-Based Rail Solutions*, Collins Aerospace, <https://web.archive.org/web/20211122013021/https://www.collinsaerospace.com/-/media/project/collinsaerospace/collinsaerospace-website/product-assets/marketing/r/rail/arinc-rail-solutions-for-passengers.pdf?rev=e7e5ddbff2de4154ba265f03e27f14d3>; *Advanced Information Management (AIM) Rail Dispatch*, WABTEC, <https://www.wabteccorp.com/digital-intelligence/signaling-and-train-control/dispatch/advanced-information-management-aim-rail-dispatch> (last visited July 22, 2024).

## Centralized Traffic Control and SCADA

Collins designs and integrates state-of-the-art rail control solutions using our ARINC Advanced Information Management (AIM®) platform. AIM serves as an end-to-end solution for all rail control requirements, including SCADA, Centralized Traffic Control, Positive Train Control (PTC) and control center integration. Highly flexible and feature-rich, AIM enables railroads to maximize operational efficiency, cost-effectiveness and safety, all while providing an environment protected by the latest tools and techniques in cybersecurity.

### KEY AREAS OF EXPERTISE

- |                                                       |                                                      |
|-------------------------------------------------------|------------------------------------------------------|
| • Train monitoring and control                        | • Bulletins, authorities and restrictions management |
| • Automatic train tracking                            | • Employee in Charge (EIC) terminals                 |
| • Automatic route setting/automatic routing           | • Emergency Operating Procedures (EOP)               |
| • Automatic traffic regulation and schedule deviation | • Power planning                                     |
| • Schedule management                                 | • Playback and simulation                            |
| • Integrated yard management                          | • Data acquisition                                   |
|                                                       | • Interface integration                              |

233. The RailwayNet<sup>SM</sup> system/AIM system and/or other same or similar system or method, as implemented by NJ Transit, is a SaaS and IaaS product that provides “full-featured network management and infrastructure, hardware, network, operating systems, and applications for fault, performance, security and configuration management.”<sup>167</sup> Additionally, RailwayNet<sup>SM</sup> system/AIM system and/or other same or similar system or method is “designed to help meet the availability standards required for PTC operations.”<sup>168</sup> Because the system is designed to support railroads to meet the PTC requirements, it is configured to manage train movements, including placing blocks on one or more sections of railway track to prevent trains from traversing the one or more sections of railway track.

234. In order to comply with and implement FRA’s recommended regulations

<sup>167</sup> White Paper at 6.

<sup>168</sup> *Id.*

(communication-based/processor-based train control technology designed to address a number of railway safety issues including train-to-train collisions, over-speed derailments, incursions into established work-zone limits, and train movement through a main-line switch that is in an improper position), the RailwayNet<sup>SM</sup> system/AIM system and/or other same or similar system or method is configured to place a block on one or more sections of railway track to prevent trains from traversing the one or more sections of railway track.<sup>169</sup>

235. Accordingly, NJ Transit's implementation of the RailwayNet<sup>SM</sup> system/AIM system and/or other same or similar system or method includes a railway control apparatus that executes computer-executable instructions to "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."

236. NJ Transit's implementation of the RailwayNet<sup>SM</sup> system/AIM system and/or other same or similar system or method includes a railway control apparatus that executes computer-executable instructions to "generate a secret code associated with the at least one selected track section."

237. NJ Transit's implementation of the RailwayNet<sup>SM</sup> system/AIM system and/or other same or similar system or method includes an "Enhanced Employee Protection System" whereby its CTC system generates "a four digit PIN (EEPS code)" associated with a block.<sup>170</sup>

#### Enhanced Employee Protection System (EEPS)

The Enhanced Employee Protection System (EEPS) is an electronic means of providing track protection to employees along the right of way. Prior to taking a track out of service or issuing foul time, the employee requesting to do so must possess a company issued cell phone. Through their company cell phone, the employee will be given a four digit PIN (EEPS code). When ready to relinquish the out of service limits or foul time, the protected employee must first provide the Dispatcher with their individual EEPS code. Only then will the Dispatcher be able to remove the blocking devices providing protection.

<sup>169</sup> See Final Report at 14; see also *NEC One-Year Plan 2019* at 233.

<sup>170</sup> NJT EEPS Guidance Sheet at 1.

238. The “four digit PIN (EEPS code)” generated is secret. It is unique to the railway worker and only known by the railway worker (until such time that it is disclosed by the railway worker to the dispatcher in order to allow the dispatcher to remove the blocking devices providing the protection).<sup>171</sup>

239. Additionally, the dispatcher must confirm with the railway worker the railway worker’s identity, *i.e.*, “the phone number associated with that company issued cell phone,” as well as the employees’ “title and name, and track designation and limits being released.”<sup>172</sup>

240. Moreover, the RailwayNet<sup>SM</sup> system/AIM system and/or other same or similar system or method, implemented by NJ Transit, specifies providing back office infrastructure and messaging, including “[s]torage and delivery of crew and consist information, train IDs and clearances.”<sup>173</sup> It further specifies enabling ITC PTC interoperability and compliance with I-ETMS systems.<sup>174</sup> Because I-ETMS systems require communication of crew verification and employee authentication, NJ Transit maintains electronic contact addresses of the railway field workers from a rail personnel contact database. The systems messaging functions also include: “[k]ey exchange server,” described as “[s]ecurity keys with data store.”<sup>175</sup>

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<sup>171</sup> *Id.* (“When ready to relinquish the out of service limits or foul time, the protected employee must first provide the Dispatcher with *their individual EEPS code.*”) (emphasis added).

<sup>172</sup> *Id.*

<sup>173</sup> See White Paper at 7.

<sup>174</sup> See Final Report at 43.

<sup>175</sup> White Paper at 7.

A summary of the ARINC RailwayNet PTC hosting service functionality is shown below.

| Messaging functions             | Description                                                                                                                                    | Included |
|---------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------|----------|
| Back-office messaging           | Message transmission for the railroad back office                                                                                              | •*       |
| Inter-office messaging          | Message transmission between assets and railroad back offices in support of train initialization                                               | •*       |
| Systems management gateway      | Messaging systems management                                                                                                                   | •        |
| Systems management              | Remote asset monitoring and control                                                                                                            | Optional |
| Back-office area communications | Communications infrastructure at the Annapolis facility in support of railroad remote asset connectivity via cellular and internet connections | •        |
| Key exchange server             | Security keys with data store                                                                                                                  | •        |

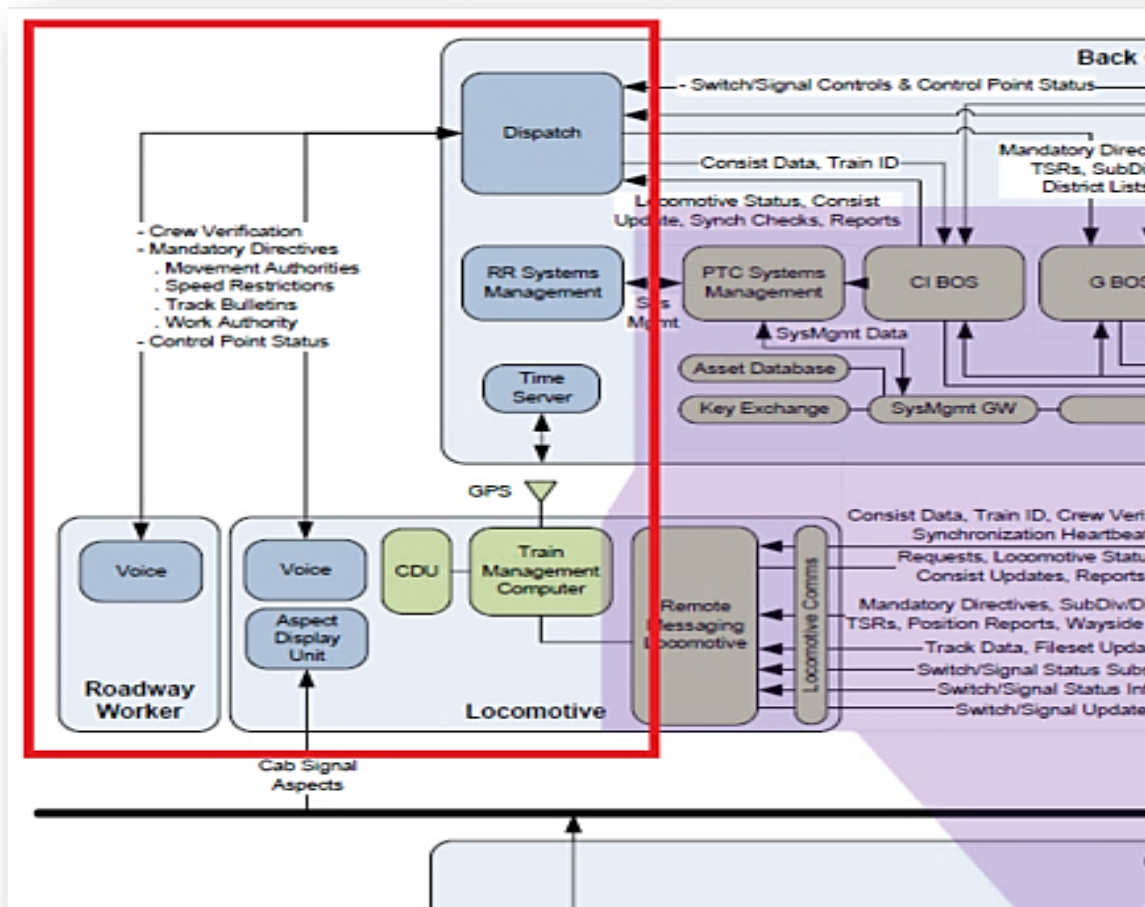
241. Furthermore, NJ Transit has directed its employees to a “Sprint Representative” to “setup their company phones to be able to receive the E.E.P.S. code,” as well as for all “company cell phone issues regarding the E.E.P.S. Code.”<sup>176</sup> Sprint, now part of T-Mobile, is a provider of network access to mobile devices as well as related memory storage services.<sup>177</sup>

242. Moreover, the RailwayNet<sup>SM</sup> system/AIM system and/or other same or similar system or method, as implemented by NJ Transit, specifies providing back-office infrastructure and messaging that allows railway workers to communicate, inter alia, crew verification and mandatory directives with the dispatch.<sup>178</sup>

<sup>176</sup> Scott Spratt, EEPS Code, SMARTLOCAL60 (June 30, 2017), <https://utulocal60.com/2017/06/30/eeeps-code/>.

<sup>177</sup> Sprint is now part of the family, T-MOBILE, <https://www.t-mobile.com/brand/t-mobile-sprint-merger-updates> (last visited July 22, 2024).

<sup>178</sup> Final Report at 14.



243. The secret code generated by the “back office” is associated with at least one section of track. In NJ Transit’s implementation of the RailwayNet<sup>SM</sup> system/AIM system and/or other similar system or method, a dispatcher can take a section of track out of service and/or put it in foul time.<sup>179</sup> In order for the dispatcher to complete these functions, the secret code (which must be transmitted to the dispatcher prior to taking an individual track out of service and/or putting it in foul time<sup>180</sup>) must be associated with at least one section of track.

244. Accordingly, NJ Transit’s implementation of the RailwayNet<sup>SM</sup> system/AIM

<sup>179</sup> NJT EEPs Guidance Sheet at 1.

<sup>180</sup> *Id.*

system and/or other same or similar system or method includes a railway control apparatus that executes computer-executable instructions to “generate a secret code associated with the at least one selected track section.”

245. NJ Transit’s implementation of the RailwayNet<sup>SM</sup> system/AIM system and/or other same or similar system or method includes a railway control apparatus that executes computer-executable instructions to “transmit the secret code to a remote user terminal.”

246. NJ Transit’s implementation of the RailwayNet<sup>SM</sup> system/AIM system and/or other same or similar system or method requires that the employee provide the dispatcher with their “individual EEPS code” prior to the dispatcher removing the blocking devices.<sup>181</sup>

#### Enhanced Employee Protection System (EEPS)

The Enhanced Employee Protection System (EEPS) is an electronic means of providing track protection to employees along the right of way. Prior to taking a track out of service or issuing foul time, the employee requesting to do so must possess a company issued cell phone. Through their company cell phone, the employee will be given a four digit PIN (EEPS code). When ready to relinquish the out of service limits or foul time, the protected employee must first provide the Dispatcher with their individual EEPS code. Only then will the Dispatcher be able to remove the blocking devices providing protection.

247. The dispatcher receives the code via remote user terminal, i.e., a terminal located at NJ Transit’s control centers.

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<sup>181</sup> *Id.*

ROC<sup>182</sup>



PSCC<sup>183</sup>



248. Accordingly, NJ Transit’s implementation of the RailwayNet<sup>SM</sup> system/AIM system and/or other same or similar system or method includes a railway control apparatus that executes computer-executable instructions to “transmit the secret code to a remote user terminal.”

<sup>182</sup> CASE STUDY: NEW JERSEY TRANSIT, <https://activu.com/uploads/NJ-Transit-Case-Study.pdf> (last visited July 22, 2024).

<sup>183</sup> *A Rare Peek Inside The Penn Station Central Control Room*, GOTHAMIST (July 26, 2017), <https://gothamist.com/news/a-rare-peek-inside-the-penn-station-central-control-room>.

249. Therefore, NJ Transit, through its implementation of the RailwayNet<sup>SM</sup> system/AIM system and/or other same or similar system or method, has infringed and continues to infringe at least claim 20 of the '115 patent.

250. As direct and proximate result of NJ Transit's infringement of the '115 patent, Railware has been injured and has been caused significant harm and financial damages.

251. NJ Transit has also induced and continues to induce infringement of at least claim 20 of the '115 patent in violation of 35 U.S.C. § 271(b).

252. NJ Transit induces its users, and/or developers of its systems or methods to infringe at least claim 20 of the '115 patent, and does so with the specific intent, by providing instructions, directions, information, and/or knowledge on how to use its systems or methods and/or incorporate its systems or methods into other products (including both the RailwayNet/AIM systems and any similar systems or methods). For example, NJ Transit instructs its own dispatchers, as well as potentially dispatchers employed by other transportation providers like Amtrak,<sup>184</sup> on how to use the system to infringe.

253. NJ Transit had notice of and was aware of its infringement of the '115 patent by at least November 22, 2016. To the extent the marking requirements of 35 U.S.C. § 287 apply, NJ Transit has had constructive knowledge of the '115 patent at least since October 21, 2020. Moreover, NJ Transit knew or should have known and received notice of the '115 patent on at least the date of its reissuance, June 28, 2022. Further, NJ Transit knew or should have known and received notice of the '115 patent on at least June 15, 2022, which is the date Railware filed suit against Amtrak for infringement of the '115 patent.

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<sup>184</sup> See *id.*; see also NORTHEAST CORRIDOR ONE-YEAR IMPLEMENTATION PLAN: FISCAL YEAR 2018 (Oct. 2017), <http://nec-commission.com/app/uploads/2018/03/NEC-One-Year-Implementation-Plan-FY18.pdf> (illustrating Amtrak's plan to implement an "EEPS" system throughout the Northeast Corridor.)

254. NJ Transit's continued infringement on or after any of these dates is in spite of the objectively high likelihood that its activities constitute infringement of a valid patent, and this risk was either known or so obvious that it should have been known to NJ Transit. Thus, NJ Transit's continued infringement since at least as of November 22, 2016 is willful and deliberate.

255. Railware has suffered and continues to suffer damages and irreparable harm as a result of NJ Transit's past and ongoing infringement. Unless and until NJ Transit's infringement is enjoined, Railware will continue to be damaged and irreparably harmed.

256. Railware is entitled to all remedies at law and equity including, but not limited to, an injunction against NJ Transit's infringement of the '115 patent pursuant to 35 U.S.C. § 283.

257. Railware is entitled to damages for NJ Transit's infringement of the '115 patent including, but not limited to, damages pursuant to 35 U.S.C. §§ 284 and 285.

#### **JURY DEMAND**

Railware respectfully requests a jury trial on all triable issues.

#### **REQUEST FOR RELIEF**

Railware respectfully asks that the Court enter judgment in its favor as follows:

- A. Judgment in favor of Railware and against NJ Transit on each cause of action alleged herein;
- B. Finding that NJ Transit has infringed and is infringing the Asserted Patents;
- C. Finding that NJ Transit's infringement of the Asserted Patents has been and continues to be willful;
- D. Awarding Railware damages adequate to compensate it for NJ Transit's past and present infringement, but in no event less than a reasonable royalty;
- E. Awarding an accounting and supplemental damages for those acts of infringement

committed by NJ Transit subsequent to the discovery cut-off date in this action through the date Final Judgment is entered;

F. Ordering that damages for infringement of the Asserted Patents be trebled as provided for by 35 U.S.C. § 284 for NJ Transit's willful infringement of the Asserted Patents;

G. Finding that this case is exceptional;

H. Awarding Railware its attorneys' fees and costs, together with prejudgment and post-judgment interest;

I. A preliminary and permanent injunction against NJ Transit's continued direct and indirect infringement;

J. To the extent injunctive relief is not awarded, awarding Railware damages adequate to compensate Railware for NJ Transit's future infringement, but in no event less than a reasonable royalty; and

K. Any further relief that this Court deems just and proper.

Dated: July 22, 2024

Respectfully submitted,

By: Bryan J. Vogel

Bryan J. Vogel (BV7771)  
BVogel@RobinsKaplan.com  
Derrick J. Carman (5193768)  
DCarman@RobinsKaplan.com  
Travis K. Waller (5873724)  
TWaller@RobinsKaplan.com  
**ROBINS KAPLAN LLP**  
1325 Avenue of the Americas  
Suite 2601  
New York, New York 10019  
(212) 980-7400

*Attorneys for Plaintiff  
Railware, Inc.*