National Transportation Safety Board

Washington, DC 20594

Safety Recommendation

Date: December 19, 2016

In reply refer to: H-16-15

Mr. Tim Cook
Chief Executive Officer
Apple Inc.
One Infinite Loop
Cupertino, CA 95014

The National Transportation Safety Board (NTSB) is an independent federal agency charged by Congress with investigating every civil aviation accident in the United States and significant accidents in other modes of transportation—railroad, highway, marine, and pipeline. The NTSB determines the probable cause of the accidents and issues safety recommendations aimed at preventing future accidents. In addition, we carry out special studies concerning transportation safety and coordinate the resources of the federal government and other organizations to provide assistance to victims and their family members affected by major transportation disasters. We are providing the following information to urge Apple Inc. to take action on the safety recommendation being issued in this letter.

On February 24, 2015, in the predawn hours, Metrolink commuter train 102, operated by Amtrak, was en route from Oxnard, California, to Los Angeles. As the train approached the South Rice Avenue grade crossing in Oxnard, it collided with a 2005 Ford F450 service truck towing a utility trailer.[1] The truck driver had inadvertently turned from South Rice Avenue onto the Union Pacific Railroad track, and the truck became lodged on the track. The train was occupied by three crew members and 51 passengers. After striking the truck and trailer, the train continued through the grade crossing, where all four coach cars subsequently derailed. The truck was pushed along the track and came to rest about 130 feet east of the grade crossing. A postcrash fire consumed the trailer. As a result of the crash, the train engineer died, and 32 passengers and crew members were injured. The truck driver sustained minor injuries. Additional information about this crash and the resulting recommendations may be found at our website, www.ntsb.gov, under report number NTSB/HAB-16/07.

[1] See *Train and Truck Crash on Railroad Right-of-Way and Subsequent Fire, Oxnard, California, February 24, 2015*, Highway Accident Brief NTSB/HAB-16/07 (Washington, DC: NTSB, 2016).

The truck driver used an application on his cell phone to navigate to his intended destination in Oxnard, in addition to handwritten directions provided by his employer. The crash occurred at 5:44 a.m., and the driver was fatigued and unfamiliar with the area. It is possible that he relied on the application to find his destination and subsequently misinterpreted the visual and audible cues available to him. At the time of the crash, the application did not include grade crossing data; thus, it provided no specific information on the grade crossing located parallel to, and just 57 feet from, East Fifth Street, the driver's intended route. We concluded that had the driver's navigation application included information on the upcoming grade crossing, he would have been less likely to misinterpret the visual cues and mistakenly turn onto the railroad tracks on his approach to the East Fifth Street intersection.

As a result of this investigation, we issued two new recommendations, including one to the North American Cartographic Information Society and the following recommendation to Apple Inc. and 13 other companies:

H-16-15

> Incorporate grade crossing-related geographic data, such as those currently being prepared by the Federal Railroad Administration, into your navigation applications to provide road users with additional safety cues and to reduce the likelihood of crashes at or near public or private grade crossings.

This safety recommendation is derived from the NTSB's investigation and is consistent with the evidence we found and the analysis we performed. Chairman HART, Vice Chairman DINH-ZARR, and Members SUMWALT and WEENER concurred in this recommendation.

The NTSB is vitally interested in this recommendation because it is designed to prevent accidents and save lives. We would appreciate receiving a response from you within 90 days detailing the actions you have taken or intend to take to implement it. When replying, please refer to the safety recommendation by number. We encourage you to submit your response electronically to correspondence@ntsb.gov.

[Original Signed]

By: Christopher A. Hart,
Chairman

National Transportation Safety Board

Washington, DC 20594

Safety Recommendation

Date: December 19, 2016

In reply refer to: H-16-15

Mr. Clifton A. Pemble
President and Chief Executive Officer
Garmin International, Inc.
1200 East 151st St.
Olathe, KS 66062

The National Transportation Safety Board (NTSB) is an independent federal agency charged by Congress with investigating every civil aviation accident in the United States and significant accidents in other modes of transportation—railroad, highway, marine, and pipeline. The NTSB determines the probable cause of the accidents and issues safety recommendations aimed at preventing future accidents. In addition, we carry out special studies concerning transportation safety and coordinate the resources of the federal government and other organizations to provide assistance to victims and their family members affected by major transportation disasters. We are providing the following information to urge Garmin International, Inc., to take action on the safety recommendation being issued in this letter.

On February 24, 2015, in the predawn hours, Metrolink commuter train 102, operated by Amtrak, was en route from Oxnard, California, to Los Angeles. As the train approached the South Rice Avenue grade crossing in Oxnard, it collided with a 2005 Ford F450 service truck towing a utility trailer.[1] The truck driver had inadvertently turned from South Rice Avenue onto the Union Pacific Railroad track, and the truck became lodged on the track. The train was occupied by three crew members and 51 passengers. After striking the truck and trailer, the train continued through the grade crossing, where all four coach cars subsequently derailed. The truck was pushed along the track and came to rest about 130 feet east of the grade crossing. A postcrash fire consumed the trailer. As a result of the crash, the train engineer died, and 32 passengers and crew members were injured. The truck driver sustained minor injuries. Additional information about this crash and the resulting recommendations may be found at our website, www.ntsb.gov, under report number NTSB/HAB-16/07.

[1] See *Train and Truck Crash on Railroad Right-of-Way and Subsequent Fire, Oxnard, California, February 24, 2015*, Highway Accident Brief NTSB/HAB-16/07 (Washington, DC: NTSB, 2016).

The truck driver used an application on his cell phone to navigate to his intended destination in Oxnard, in addition to handwritten directions provided by his employer. The crash occurred at 5:44 a.m., and the driver was fatigued and unfamiliar with the area. It is possible that he relied on the application to find his destination and subsequently misinterpreted the visual and audible cues available to him. At the time of the crash, the application did not include grade crossing data; thus, it provided no specific information on the grade crossing located parallel to, and just 57 feet from, East Fifth Street, the driver's intended route. We concluded that had the driver's navigation application included information on the upcoming grade crossing, he would have been less likely to misinterpret the visual cues and mistakenly turn onto the railroad tracks on his approach to the East Fifth Street intersection.

As a result of this investigation, we issued two new recommendations, including one to the North American Cartographic Information Society and the following recommendation to Garmin International, Inc., and 13 other companies:

H-16-15

> Incorporate grade crossing-related geographic data, such as those currently being prepared by the Federal Railroad Administration, into your navigation applications to provide road users with additional safety cues and to reduce the likelihood of crashes at or near public or private grade crossings.

This safety recommendation is derived from the NTSB's investigation and is consistent with the evidence we found and the analysis we performed. Chairman HART, Vice Chairman DINH-ZARR, and Members SUMWALT and WEENER concurred in this recommendation.

The NTSB is vitally interested in this recommendation because it is designed to prevent accidents and save lives. We would appreciate receiving a response from you within 90 days detailing the actions you have taken or intend to take to implement it. When replying, please refer to the safety recommendation by number. We encourage you to submit your response electronically to correspondence@ntsb.gov.

[Original Signed]

By: Christopher A. Hart,
Chairman

National Transportation Safety Board

Washington, DC 20594

Safety Recommendation

Date: December 19, 2016

In reply refer to: H-16-15

Mr. Sundar Pichai
Chief Executive Officer
Google Inc.
1600 Amphitheater Pkwy.
Mountain View, CA 94043

The National Transportation Safety Board (NTSB) is an independent federal agency charged by Congress with investigating every civil aviation accident in the United States and significant accidents in other modes of transportation—railroad, highway, marine, and pipeline. The NTSB determines the probable cause of the accidents and issues safety recommendations aimed at preventing future accidents. In addition, we carry out special studies concerning transportation safety and coordinate the resources of the federal government and other organizations to provide assistance to victims and their family members affected by major transportation disasters. We are providing the following information to urge Google Inc. to take action on the safety recommendation being issued in this letter.

On February 24, 2015, in the predawn hours, Metrolink commuter train 102, operated by Amtrak, was en route from Oxnard, California, to Los Angeles. As the train approached the South Rice Avenue grade crossing in Oxnard, it collided with a 2005 Ford F450 service truck towing a utility trailer.[1] The truck driver had inadvertently turned from South Rice Avenue onto the Union Pacific Railroad track, and the truck became lodged on the track. The train was occupied by three crew members and 51 passengers. After striking the truck and trailer, the train continued through the grade crossing, where all four coach cars subsequently derailed. The truck was pushed along the track and came to rest about 130 feet east of the grade crossing. A postcrash fire consumed the trailer. As a result of the crash, the train engineer died, and 32 passengers and crew members were injured. The truck driver sustained minor injuries. Additional information about this crash and the resulting recommendations may be found at our website, www.ntsb.gov, under report number NTSB/HAB-16/07.

[1] See *Train and Truck Crash on Railroad Right-of-Way and Subsequent Fire, Oxnard, California, February 24, 2015*, Highway Accident Brief NTSB/HAB-16/07 (Washington, DC: NTSB, 2016).

The truck driver used an application on his cell phone to navigate to his intended destination in Oxnard, in addition to handwritten directions provided by his employer. The crash occurred at 5:44 a.m., and the driver was fatigued and unfamiliar with the area. It is possible that he relied on the application to find his destination and subsequently misinterpreted the visual and audible cues available to him. At the time of the crash, the application did not include grade crossing data; thus, it provided no specific information on the grade crossing located parallel to, and just 57 feet from, East Fifth Street, the driver's intended route. We concluded that had the driver's navigation application included information on the upcoming grade crossing, he would have been less likely to misinterpret the visual cues and mistakenly turn onto the railroad tracks on his approach to the East Fifth Street intersection.

As a result of this investigation, we issued two new recommendations, including one to the North American Cartographic Information Society and the following recommendation to Google Inc. and 13 other companies:

H-16-15

> Incorporate grade crossing-related geographic data, such as those currently being prepared by the Federal Railroad Administration, into your navigation applications to provide road users with additional safety cues and to reduce the likelihood of crashes at or near public or private grade crossings.

This safety recommendation is derived from the NTSB's investigation and is consistent with the evidence we found and the analysis we performed. Chairman HART, Vice Chairman DINH-ZARR, and Members SUMWALT and WEENER concurred in this recommendation.

The NTSB is vitally interested in this recommendation because it is designed to prevent accidents and save lives. We would appreciate receiving a response from you within 90 days detailing the actions you have taken or intend to take to implement it. When replying, please refer to the safety recommendation by number. We encourage you to submit your response electronically to correspondence@ntsb.gov.

[Original Signed]

By: Christopher A. Hart,
Chairman

National Transportation Safety Board

Washington, DC 20594

Safety Recommendation

Date: December 19, 2016

In reply refer to: H-16-15

Mr. Aaron Dannenbring
Senior Vice President, Core Map Group
HERE Global BV
425 West Randolph St.
Chicago, IL 60606

The National Transportation Safety Board (NTSB) is an independent federal agency charged by Congress with investigating every civil aviation accident in the United States and significant accidents in other modes of transportation—railroad, highway, marine, and pipeline. The NTSB determines the probable cause of the accidents and issues safety recommendations aimed at preventing future accidents. In addition, we carry out special studies concerning transportation safety and coordinate the resources of the federal government and other organizations to provide assistance to victims and their family members affected by major transportation disasters. We are providing the following information to urge HERE Global BV to take action on the safety recommendation being issued in this letter.

On February 24, 2015, in the predawn hours, Metrolink commuter train 102, operated by Amtrak, was en route from Oxnard, California, to Los Angeles. As the train approached the South Rice Avenue grade crossing in Oxnard, it collided with a 2005 Ford F450 service truck towing a utility trailer.[1] The truck driver had inadvertently turned from South Rice Avenue onto the Union Pacific Railroad track, and the truck became lodged on the track. The train was occupied by three crew members and 51 passengers. After striking the truck and trailer, the train continued through the grade crossing, where all four coach cars subsequently derailed. The truck was pushed along the track and came to rest about 130 feet east of the grade crossing. A postcrash fire consumed the trailer. As a result of the crash, the train engineer died, and 32 passengers and crew members were injured. The truck driver sustained minor injuries. Additional information about this crash and the resulting recommendations may be found at our website, www.ntsb.gov, under report number NTSB/HAB-16/07.

[1] See *Train and Truck Crash on Railroad Right-of-Way and Subsequent Fire, Oxnard, California, February 24, 2015*, Highway Accident Brief NTSB/HAB-16/07 (Washington, DC: NTSB, 2016).

The truck driver used an application on his cell phone to navigate to his intended destination in Oxnard, in addition to handwritten directions provided by his employer. The crash occurred at 5:44 a.m., and the driver was fatigued and unfamiliar with the area. It is possible that he relied on the application to find his destination and subsequently misinterpreted the visual and audible cues available to him. At the time of the crash, the application did not include grade crossing data; thus, it provided no specific information on the grade crossing located parallel to, and just 57 feet from, East Fifth Street, the driver's intended route. We concluded that had the driver's navigation application included information on the upcoming grade crossing, he would have been less likely to misinterpret the visual cues and mistakenly turn onto the railroad tracks on his approach to the East Fifth Street intersection.

As a result of this investigation, we issued two new recommendations, including one to the North American Cartographic Information Society and the following recommendation to HERE Global BV and 13 other companies:

H-16-15

> Incorporate grade crossing-related geographic data, such as those currently being prepared by the Federal Railroad Administration, into your navigation applications to provide road users with additional safety cues and to reduce the likelihood of crashes at or near public or private grade crossings.

This safety recommendation is derived from the NTSB's investigation and is consistent with the evidence we found and the analysis we performed. Chairman HART, Vice Chairman DINH-ZARR, and Members SUMWALT and WEENER concurred in this recommendation.

The NTSB is vitally interested in this recommendation because it is designed to prevent accidents and save lives. We would appreciate receiving a response from you within 90 days detailing the actions you have taken or intend to take to implement it. When replying, please refer to the safety recommendation by number. We encourage you to submit your response electronically to correspondence@ntsb.gov.

[Original Signed]

By: Christopher A. Hart,
Chairman

National Transportation Safety Board

Washington, DC 20594

Safety Recommendation

Date: December 19, 2016

In reply refer to: H-16-15

Mr. Bryan Mistele
President and Chief Executive Officer
INRIX
10210 NE Points Dr., Suite 400
Kirkland, WA 98033

The National Transportation Safety Board (NTSB) is an independent federal agency charged by Congress with investigating every civil aviation accident in the United States and significant accidents in other modes of transportation—railroad, highway, marine, and pipeline. The NTSB determines the probable cause of the accidents and issues safety recommendations aimed at preventing future accidents. In addition, we carry out special studies concerning transportation safety and coordinate the resources of the federal government and other organizations to provide assistance to victims and their family members affected by major transportation disasters. We are providing the following information to urge INRIX to take action on the safety recommendation being issued in this letter.

On February 24, 2015, in the predawn hours, Metrolink commuter train 102, operated by Amtrak, was en route from Oxnard, California, to Los Angeles. As the train approached the South Rice Avenue grade crossing in Oxnard, it collided with a 2005 Ford F450 service truck towing a utility trailer.[1] The truck driver had inadvertently turned from South Rice Avenue onto the Union Pacific Railroad track, and the truck became lodged on the track. The train was occupied by three crew members and 51 passengers. After striking the truck and trailer, the train continued through the grade crossing, where all four coach cars subsequently derailed. The truck was pushed along the track and came to rest about 130 feet east of the grade crossing. A postcrash fire consumed the trailer. As a result of the crash, the train engineer died, and 32 passengers and crew members were injured. The truck driver sustained minor injuries. Additional information about this crash and the resulting recommendations may be found at our website, www.ntsb.gov, under report number NTSB/HAB-16/07.

[1] See *Train and Truck Crash on Railroad Right-of-Way and Subsequent Fire, Oxnard, California, February 24, 2015*, Highway Accident Brief NTSB/HAB-16/07 (Washington, DC: NTSB, 2016).

National Transportation Safety Board

Washington, DC 20594

Safety Recommendation

Date: December 19, 2016

In reply refer to: H-16-15

Mr. Brad McMahon
General Manager
MapQuest, Inc.
1515 Blake St., Third Floor
Denver, CO 80202

The National Transportation Safety Board (NTSB) is an independent federal agency charged by Congress with investigating every civil aviation accident in the United States and significant accidents in other modes of transportation—railroad, highway, marine, and pipeline. The NTSB determines the probable cause of the accidents and issues safety recommendations aimed at preventing future accidents. In addition, we carry out special studies concerning transportation safety and coordinate the resources of the federal government and other organizations to provide assistance to victims and their family members affected by major transportation disasters. We are providing the following information to urge MapQuest, Inc., to take action on the safety recommendation being issued in this letter.

On February 24, 2015, in the predawn hours, Metrolink commuter train 102, operated by Amtrak, was en route from Oxnard, California, to Los Angeles. As the train approached the South Rice Avenue grade crossing in Oxnard, it collided with a 2005 Ford F450 service truck towing a utility trailer.[1] The truck driver had inadvertently turned from South Rice Avenue onto the Union Pacific Railroad track, and the truck became lodged on the track. The train was occupied by three crew members and 51 passengers. After striking the truck and trailer, the train continued through the grade crossing, where all four coach cars subsequently derailed. The truck was pushed along the track and came to rest about 130 feet east of the grade crossing. A postcrash fire consumed the trailer. As a result of the crash, the train engineer died, and 32 passengers and crew members were injured. The truck driver sustained minor injuries. Additional information about this crash and the resulting recommendations may be found at our website, www.ntsb.gov, under report number NTSB/HAB-16/07.

[1] See *Train and Truck Crash on Railroad Right-of-Way and Subsequent Fire, Oxnard, California, February 24, 2015*, Highway Accident Brief NTSB/HAB-16/07 (Washington, DC: NTSB, 2016).

The truck driver used an application on his cell phone to navigate to his intended destination in Oxnard, in addition to handwritten directions provided by his employer. The crash occurred at 5:44 a.m., and the driver was fatigued and unfamiliar with the area. It is possible that he relied on the application to find his destination and subsequently misinterpreted the visual and audible cues available to him. At the time of the crash, the application did not include grade crossing data; thus, it provided no specific information on the grade crossing located parallel to, and just 57 feet from, East Fifth Street, the driver's intended route. We concluded that had the driver's navigation application included information on the upcoming grade crossing, he would have been less likely to misinterpret the visual cues and mistakenly turn onto the railroad tracks on his approach to the East Fifth Street intersection.

As a result of this investigation, we issued two new recommendations, including one to the North American Cartographic Information Society and the following recommendation to MapQuest, Inc., and 13 other companies:

H-16-15

> Incorporate grade crossing-related geographic data, such as those currently being prepared by the Federal Railroad Administration, into your navigation applications to provide road users with additional safety cues and to reduce the likelihood of crashes at or near public or private grade crossings.

This safety recommendation is derived from the NTSB's investigation and is consistent with the evidence we found and the analysis we performed. Chairman HART, Vice Chairman DINH-ZARR, and Members SUMWALT and WEENER concurred in this recommendation.

The NTSB is vitally interested in this recommendation because it is designed to prevent accidents and save lives. We would appreciate receiving a response from you within 90 days detailing the actions you have taken or intend to take to implement it. When replying, please refer to the safety recommendation by number. We encourage you to submit your response electronically to correspondence@ntsb.gov.

[Original Signed]

By: Christopher A. Hart,
Chairman

National Transportation Safety Board

Washington, DC 20594

Safety Recommendation

Date: December 19, 2016

In reply refer to: H-16-15

Mr. Satya Nadella
Chief Executive Officer
Microsoft
One Microsoft Way
Redmond, WA 98502

The National Transportation Safety Board (NTSB) is an independent federal agency charged by Congress with investigating every civil aviation accident in the United States and significant accidents in other modes of transportation—railroad, highway, marine, and pipeline. The NTSB determines the probable cause of the accidents and issues safety recommendations aimed at preventing future accidents. In addition, we carry out special studies concerning transportation safety and coordinate the resources of the federal government and other organizations to provide assistance to victims and their family members affected by major transportation disasters. We are providing the following information to urge Microsoft to take action on the safety recommendation being issued in this letter.

On February 24, 2015, in the predawn hours, Metrolink commuter train 102, operated by Amtrak, was en route from Oxnard, California, to Los Angeles. As the train approached the South Rice Avenue grade crossing in Oxnard, it collided with a 2005 Ford F450 service truck towing a utility trailer.[1] The truck driver had inadvertently turned from South Rice Avenue onto the Union Pacific Railroad track, and the truck became lodged on the track. The train was occupied by three crew members and 51 passengers. After striking the truck and trailer, the train continued through the grade crossing, where all four coach cars subsequently derailed. The truck was pushed along the track and came to rest about 130 feet east of the grade crossing. A postcrash fire consumed the trailer. As a result of the crash, the train engineer died, and 32 passengers and crew members were injured. The truck driver sustained minor injuries. Additional information about this crash and the resulting recommendations may be found at our website, www.ntsb.gov, under report number NTSB/HAB-16/07.

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The truck driver used an application on his cell phone to navigate to his intended destination in Oxnard, in addition to handwritten directions provided by his employer. The crash occurred at 5:44 a.m., and the driver was fatigued and unfamiliar with the area. It is possible that he relied on the application to find his destination and subsequently misinterpreted the visual and audible cues available to him. At the time of the crash, the application did not include grade crossing data; thus, it provided no specific information on the grade crossing located parallel to, and just 57 feet from, East Fifth Street, the driver's intended route. We concluded that had the driver's navigation application included information on the upcoming grade crossing, he would have been less likely to misinterpret the visual cues and mistakenly turn onto the railroad tracks on his approach to the East Fifth Street intersection.

As a result of this investigation, we issued two new recommendations, including one to the North American Cartographic Information Society and the following recommendation to Microsoft and 13 other companies:

H-16-15

> Incorporate grade crossing-related geographic data, such as those currently being prepared by the Federal Railroad Administration, into your navigation applications to provide road users with additional safety cues and to reduce the likelihood of crashes at or near public or private grade crossings.

This safety recommendation is derived from the NTSB's investigation and is consistent with the evidence we found and the analysis we performed. Chairman HART, Vice Chairman DINH-ZARR, and Members SUMWALT and WEENER concurred in this recommendation.

The NTSB is vitally interested in this recommendation because it is designed to prevent accidents and save lives. We would appreciate receiving a response from you within 90 days detailing the actions you have taken or intend to take to implement it. When replying, please refer to the safety recommendation by number. We encourage you to submit your response electronically to correspondence@ntsb.gov.

[Original Signed]

By: Christopher A. Hart,
Chairman

National Transportation Safety Board

Washington, DC 20594

Safety Recommendation

Date: December 19, 2016

In reply refer to: H-16-15

Mr. John Graham
Chief Executive Officer
Omnitracs, LLC
717 North Harwood St., Suite 1300
Dallas, TX 75201

The National Transportation Safety Board (NTSB) is an independent federal agency charged by Congress with investigating every civil aviation accident in the United States and significant accidents in other modes of transportation—railroad, highway, marine, and pipeline. The NTSB determines the probable cause of the accidents and issues safety recommendations aimed at preventing future accidents. In addition, we carry out special studies concerning transportation safety and coordinate the resources of the federal government and other organizations to provide assistance to victims and their family members affected by major transportation disasters. We are providing the following information to urge Omnitracs, LLC, to take action on the safety recommendation being issued in this letter.

On February 24, 2015, in the predawn hours, Metrolink commuter train 102, operated by Amtrak, was en route from Oxnard, California, to Los Angeles. As the train approached the South Rice Avenue grade crossing in Oxnard, it collided with a 2005 Ford F450 service truck towing a utility trailer.[1] The truck driver had inadvertently turned from South Rice Avenue onto the Union Pacific Railroad track, and the truck became lodged on the track. The train was occupied by three crew members and 51 passengers. After striking the truck and trailer, the train continued through the grade crossing, where all four coach cars subsequently derailed. The truck was pushed along the track and came to rest about 130 feet east of the grade crossing. A postcrash fire consumed the trailer. As a result of the crash, the train engineer died, and 32 passengers and crew members were injured. The truck driver sustained minor injuries. Additional information about this crash and the resulting recommendations may be found at our website, www.ntsb.gov, under report number NTSB/HAB-16/07.

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The truck driver used an application on his cell phone to navigate to his intended destination in Oxnard, in addition to handwritten directions provided by his employer. The crash occurred at 5:44 a.m., and the driver was fatigued and unfamiliar with the area. It is possible that he relied on the application to find his destination and subsequently misinterpreted the visual and audible cues available to him. At the time of the crash, the application did not include grade crossing data; thus, it provided no specific information on the grade crossing located parallel to, and just 57 feet from, East Fifth Street, the driver's intended route. We concluded that had the driver's navigation application included information on the upcoming grade crossing, he would have been less likely to misinterpret the visual cues and mistakenly turn onto the railroad tracks on his approach to the East Fifth Street intersection.

As a result of this investigation, we issued two new recommendations, including one to the North American Cartographic Information Society and the following recommendation to Omnitracs, LLC, and 13 other companies:

H-16-15

> Incorporate grade crossing-related geographic data, such as those currently being prepared by the Federal Railroad Administration, into your navigation applications to provide road users with additional safety cues and to reduce the likelihood of crashes at or near public or private grade crossings.

This safety recommendation is derived from the NTSB's investigation and is consistent with the evidence we found and the analysis we performed. Chairman HART, Vice Chairman DINH-ZARR, and Members SUMWALT and WEENER concurred in this recommendation.

The NTSB is vitally interested in this recommendation because it is designed to prevent accidents and save lives. We would appreciate receiving a response from you within 90 days detailing the actions you have taken or intend to take to implement it. When replying, please refer to the safety recommendation by number. We encourage you to submit your response electronically to correspondence@ntsb.gov.

[Original Signed]

By: Christopher A. Hart,
Chairman

National Transportation Safety Board

Washington, DC 20594

Safety Recommendation

Date: December 19, 2016

In reply refer to: H-16-15

Ms. Alyssa Wright
President
OpenStreetMap US
1714 14th St. NW
Washington, DC 20009

The National Transportation Safety Board (NTSB) is an independent federal agency charged by Congress with investigating every civil aviation accident in the United States and significant accidents in other modes of transportation—railroad, highway, marine, and pipeline. The NTSB determines the probable cause of the accidents and issues safety recommendations aimed at preventing future accidents. In addition, we carry out special studies concerning transportation safety and coordinate the resources of the federal government and other organizations to provide assistance to victims and their family members affected by major transportation disasters. We are providing the following information to urge OpenStreetMap US to take action on the safety recommendation being issued in this letter.

On February 24, 2015, in the predawn hours, Metrolink commuter train 102, operated by Amtrak, was en route from Oxnard, California, to Los Angeles. As the train approached the South Rice Avenue grade crossing in Oxnard, it collided with a 2005 Ford F450 service truck towing a utility trailer.[1] The truck driver had inadvertently turned from South Rice Avenue onto the Union Pacific Railroad track, and the truck became lodged on the track. The train was occupied by three crew members and 51 passengers. After striking the truck and trailer, the train continued through the grade crossing, where all four coach cars subsequently derailed. The truck was pushed along the track and came to rest about 130 feet east of the grade crossing. A postcrash fire consumed the trailer. As a result of the crash, the train engineer died, and 32 passengers and crew members were injured. The truck driver sustained minor injuries. Additional information about this crash and the resulting recommendations may be found at our website, www.ntsb.gov, under report number NTSB/HAB-16/07.

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The truck driver used an application on his cell phone to navigate to his intended destination in Oxnard, in addition to handwritten directions provided by his employer. The crash occurred at 5:44 a.m., and the driver was fatigued and unfamiliar with the area. It is possible that he relied on the application to find his destination and subsequently misinterpreted the visual and audible cues available to him. At the time of the crash, the application did not include grade crossing data; thus, it provided no specific information on the grade crossing located parallel to, and just 57 feet from, East Fifth Street, the driver's intended route. We concluded that had the driver's navigation application included information on the upcoming grade crossing, he would have been less likely to misinterpret the visual cues and mistakenly turn onto the railroad tracks on his approach to the East Fifth Street intersection.

As a result of this investigation, we issued two new recommendations, including one to the North American Cartographic Information Society and the following recommendation to OpenStreetMap US and 13 other companies:

H-16-15

> Incorporate grade crossing-related geographic data, such as those currently being prepared by the Federal Railroad Administration, into your navigation applications to provide road users with additional safety cues and to reduce the likelihood of crashes at or near public or private grade crossings.

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[Original Signed]

By: Christopher A. Hart,
Chairman

National Transportation Safety Board

Washington, DC 20594

Safety Recommendation

Date: December 19, 2016

In reply refer to: H-16-15

Mr. Amine Haoui
Chief Executive Officer
Sensys Networks, Inc.
1608 Fourth St., Suite 200
Berkeley, CA 94710

The National Transportation Safety Board (NTSB) is an independent federal agency charged by Congress with investigating every civil aviation accident in the United States and significant accidents in other modes of transportation—railroad, highway, marine, and pipeline. The NTSB determines the probable cause of the accidents and issues safety recommendations aimed at preventing future accidents. In addition, we carry out special studies concerning transportation safety and coordinate the resources of the federal government and other organizations to provide assistance to victims and their family members affected by major transportation disasters. We are providing the following information to urge Sensys Networks, Inc., to take action on the safety recommendation being issued in this letter.

On February 24, 2015, in the predawn hours, Metrolink commuter train 102, operated by Amtrak, was en route from Oxnard, California, to Los Angeles. As the train approached the South Rice Avenue grade crossing in Oxnard, it collided with a 2005 Ford F450 service truck towing a utility trailer.[1] The truck driver had inadvertently turned from South Rice Avenue onto the Union Pacific Railroad track, and the truck became lodged on the track. The train was occupied by three crew members and 51 passengers. After striking the truck and trailer, the train continued through the grade crossing, where all four coach cars subsequently derailed. The truck was pushed along the track and came to rest about 130 feet east of the grade crossing. A postcrash fire consumed the trailer. As a result of the crash, the train engineer died, and 32 passengers and crew members were injured. The truck driver sustained minor injuries. Additional information about this crash and the resulting recommendations may be found at our website, www.ntsb.gov, under report number NTSB/HAB-16/07.

[1] See *Train and Truck Crash on Railroad Right-of-Way and Subsequent Fire, Oxnard, California, February 24, 2015*, Highway Accident Brief NTSB/HAB-16/07 (Washington, DC: NTSB, 2016).

The truck driver used an application on his cell phone to navigate to his intended destination in Oxnard, in addition to handwritten directions provided by his employer. The crash occurred at 5:44 a.m., and the driver was fatigued and unfamiliar with the area. It is possible that he relied on the application to find his destination and subsequently misinterpreted the visual and audible cues available to him. At the time of the crash, the application did not include grade crossing data; thus, it provided no specific information on the grade crossing located parallel to, and just 57 feet from, East Fifth Street, the driver's intended route. We concluded that had the driver's navigation application included information on the upcoming grade crossing, he would have been less likely to misinterpret the visual cues and mistakenly turn onto the railroad tracks on his approach to the East Fifth Street intersection.

As a result of this investigation, we issued two new recommendations, including one to the North American Cartographic Information Society and the following recommendation to Sensys Networks, Inc., and 13 other companies:

H-16-15

> Incorporate grade crossing-related geographic data, such as those currently being prepared by the Federal Railroad Administration, into your navigation applications to provide road users with additional safety cues and to reduce the likelihood of crashes at or near public or private grade crossings.

This safety recommendation is derived from the NTSB's investigation and is consistent with the evidence we found and the analysis we performed. Chairman HART, Vice Chairman DINH-ZARR, and Members SUMWALT and WEENER concurred in this recommendation.

The NTSB is vitally interested in this recommendation because it is designed to prevent accidents and save lives. We would appreciate receiving a response from you within 90 days detailing the actions you have taken or intend to take to implement it. When replying, please refer to the safety recommendation by number. We encourage you to submit your response electronically to correspondence@ntsb.gov.

[Original Signed]

By: Christopher A. Hart,
Chairman

National Transportation Safety Board

Washington, DC 20594

Safety Recommendation

Date: December 19, 2016

In reply refer to: H-16-15

Ms. Laura Schewel
Chief Executive Officer
StreetLight Data, Inc.
330 Townsend St., Suite 220
San Francisco, CA 94107

The National Transportation Safety Board (NTSB) is an independent federal agency charged by Congress with investigating every civil aviation accident in the United States and significant accidents in other modes of transportation—railroad, highway, marine, and pipeline. The NTSB determines the probable cause of the accidents and issues safety recommendations aimed at preventing future accidents. In addition, we carry out special studies concerning transportation safety and coordinate the resources of the federal government and other organizations to provide assistance to victims and their family members affected by major transportation disasters. We are providing the following information to urge StreetLight Data, Inc., to take action on the safety recommendation being issued in this letter.

On February 24, 2015, in the predawn hours, Metrolink commuter train 102, operated by Amtrak, was en route from Oxnard, California, to Los Angeles. As the train approached the South Rice Avenue grade crossing in Oxnard, it collided with a 2005 Ford F450 service truck towing a utility trailer.[1] The truck driver had inadvertently turned from South Rice Avenue onto the Union Pacific Railroad track, and the truck became lodged on the track. The train was occupied by three crew members and 51 passengers. After striking the truck and trailer, the train continued through the grade crossing, where all four coach cars subsequently derailed. The truck was pushed along the track and came to rest about 130 feet east of the grade crossing. A postcrash fire consumed the trailer. As a result of the crash, the train engineer died, and 32 passengers and crew members were injured. The truck driver sustained minor injuries. Additional information about this crash and the resulting recommendations may be found at our website, www.ntsb.gov, under report number NTSB/HAB-16/07.

[1] See *Train and Truck Crash on Railroad Right-of-Way and Subsequent Fire, Oxnard, California, February 24, 2015*, Highway Accident Brief NTSB/HAB-16/07 (Washington, DC: NTSB, 2016).

The truck driver used an application on his cell phone to navigate to his intended destination in Oxnard, in addition to handwritten directions provided by his employer. The crash occurred at 5:44 a.m., and the driver was fatigued and unfamiliar with the area. It is possible that he relied on the application to find his destination and subsequently misinterpreted the visual and audible cues available to him. At the time of the crash, the application did not include grade crossing data; thus, it provided no specific information on the grade crossing located parallel to, and just 57 feet from, East Fifth Street, the driver's intended route. We concluded that had the driver's navigation application included information on the upcoming grade crossing, he would have been less likely to misinterpret the visual cues and mistakenly turn onto the railroad tracks on his approach to the East Fifth Street intersection.

As a result of this investigation, we issued two new recommendations, including one to the North American Cartographic Information Society and the following recommendation to StreetLight Data, Inc., and 13 other companies:

H-16-15

> Incorporate grade crossing-related geographic data, such as those currently being prepared by the Federal Railroad Administration, into your navigation applications to provide road users with additional safety cues and to reduce the likelihood of crashes at or near public or private grade crossings.

This safety recommendation is derived from the NTSB's investigation and is consistent with the evidence we found and the analysis we performed. Chairman HART, Vice Chairman DINH-ZARR, and Members SUMWALT and WEENER concurred in this recommendation.

The NTSB is vitally interested in this recommendation because it is designed to prevent accidents and save lives. We would appreciate receiving a response from you within 90 days detailing the actions you have taken or intend to take to implement it. When replying, please refer to the safety recommendation by number. We encourage you to submit your response electronically to correspondence@ntsb.gov.

[Original Signed]

By: Christopher A. Hart,
Chairman

National Transportation Safety Board

Washington, DC 20594

Safety Recommendation

Date: December 19, 2016

In reply refer to: H-16-15

Mr. Renaat Ver Eecke
President
Teletrac Inc.
7391 Lincoln Way
Garden Grove, CA 92841

The National Transportation Safety Board (NTSB) is an independent federal agency charged by Congress with investigating every civil aviation accident in the United States and significant accidents in other modes of transportation—railroad, highway, marine, and pipeline. The NTSB determines the probable cause of the accidents and issues safety recommendations aimed at preventing future accidents. In addition, we carry out special studies concerning transportation safety and coordinate the resources of the federal government and other organizations to provide assistance to victims and their family members affected by major transportation disasters. We are providing the following information to urge Teletrac Inc. to take action on the safety recommendation being issued in this letter.

On February 24, 2015, in the predawn hours, Metrolink commuter train 102, operated by Amtrak, was en route from Oxnard, California, to Los Angeles. As the train approached the South Rice Avenue grade crossing in Oxnard, it collided with a 2005 Ford F450 service truck towing a utility trailer.[1] The truck driver had inadvertently turned from South Rice Avenue onto the Union Pacific Railroad track, and the truck became lodged on the track. The train was occupied by three crew members and 51 passengers. After striking the truck and trailer, the train continued through the grade crossing, where all four coach cars subsequently derailed. The truck was pushed along the track and came to rest about 130 feet east of the grade crossing. A postcrash fire consumed the trailer. As a result of the crash, the train engineer died, and 32 passengers and crew members were injured. The truck driver sustained minor injuries. Additional information about this crash and the resulting recommendations may be found at our website, www.ntsb.gov, under report number NTSB/HAB-16/07.

[1] See *Train and Truck Crash on Railroad Right-of-Way and Subsequent Fire, Oxnard, California, February 24, 2015*, Highway Accident Brief NTSB/HAB-16/07 (Washington, DC: NTSB, 2016).

The truck driver used an application on his cell phone to navigate to his intended destination in Oxnard, in addition to handwritten directions provided by his employer. The crash occurred at 5:44 a.m., and the driver was fatigued and unfamiliar with the area. It is possible that he relied on the application to find his destination and subsequently misinterpreted the visual and audible cues available to him. At the time of the crash, the application did not include grade crossing data; thus, it provided no specific information on the grade crossing located parallel to, and just 57 feet from, East Fifth Street, the driver's intended route. We concluded that had the driver's navigation application included information on the upcoming grade crossing, he would have been less likely to misinterpret the visual cues and mistakenly turn onto the railroad tracks on his approach to the East Fifth Street intersection.

As a result of this investigation, we issued two new recommendations, including one to the North American Cartographic Information Society and the following recommendation to Teletrac Inc. and 13 other companies:

H-16-15

> Incorporate grade crossing-related geographic data, such as those currently being prepared by the Federal Railroad Administration, into your navigation applications to provide road users with additional safety cues and to reduce the likelihood of crashes at or near public or private grade crossings.

This safety recommendation is derived from the NTSB's investigation and is consistent with the evidence we found and the analysis we performed. Chairman HART, Vice Chairman DINH-ZARR, and Members SUMWALT and WEENER concurred in this recommendation.

The NTSB is vitally interested in this recommendation because it is designed to prevent accidents and save lives. We would appreciate receiving a response from you within 90 days detailing the actions you have taken or intend to take to implement it. When replying, please refer to the safety recommendation by number. We encourage you to submit your response electronically to correspondence@ntsb.gov.

[Original Signed]

By: Christopher A. Hart,
Chairman

National Transportation Safety Board

Washington, DC 20594

Safety Recommendation

Date: December 19, 2016

In reply refer to: H-16-15

Mr. Harold Goddijn
Chief Executive Officer
TomTom NV
De Ruijterkade 154
Amsterdam 1011 AC
The Netherlands

The National Transportation Safety Board (NTSB) is an independent federal agency charged by Congress with investigating every civil aviation accident in the United States and significant accidents in other modes of transportation—railroad, highway, marine, and pipeline. The NTSB determines the probable cause of the accidents and issues safety recommendations aimed at preventing future accidents. In addition, we carry out special studies concerning transportation safety and coordinate the resources of the federal government and other organizations to provide assistance to victims and their family members affected by major transportation disasters. We are providing the following information to urge TomTom NV to take action on the safety recommendation being issued in this letter.

On February 24, 2015, in the predawn hours, Metrolink commuter train 102, operated by Amtrak, was en route from Oxnard, California, to Los Angeles. As the train approached the South Rice Avenue grade crossing in Oxnard, it collided with a 2005 Ford F450 service truck towing a utility trailer.[1] The truck driver had inadvertently turned from South Rice Avenue onto the Union Pacific Railroad track, and the truck became lodged on the track. The train was occupied by three crew members and 51 passengers. After striking the truck and trailer, the train continued through the grade crossing, where all four coach cars subsequently derailed. The truck was pushed along the track and came to rest about 130 feet east of the grade crossing. A postcrash fire consumed the trailer. As a result of the crash, the train engineer died, and 32 passengers and crew members were injured. The truck driver sustained minor injuries. Additional information about this crash and the resulting recommendations may be found at our website, www.ntsb.gov, under report number NTSB/HAB-16/07.

[1] See *Train and Truck Crash on Railroad Right-of-Way and Subsequent Fire, Oxnard, California, February 24, 2015*, Highway Accident Brief NTSB/HAB-16/07 (Washington, DC: NTSB, 2016).

The truck driver used an application on his cell phone to navigate to his intended destination in Oxnard, in addition to handwritten directions provided by his employer. The crash occurred at 5:44 a.m., and the driver was fatigued and unfamiliar with the area. It is possible that he relied on the application to find his destination and subsequently misinterpreted the visual and audible cues available to him. At the time of the crash, the application did not include grade crossing data; thus, it provided no specific information on the grade crossing located parallel to, and just 57 feet from, East Fifth Street, the driver's intended route. We concluded that had the driver's navigation application included information on the upcoming grade crossing, he would have been less likely to misinterpret the visual cues and mistakenly turn onto the railroad tracks on his approach to the East Fifth Street intersection.

As a result of this investigation, we issued two new recommendations, including one to the North American Cartographic Information Society and the following recommendation to TomTom NV and 13 other companies:

H-16-15

> Incorporate grade crossing-related geographic data, such as those currently being prepared by the Federal Railroad Administration, into your navigation applications to provide road users with additional safety cues and to reduce the likelihood of crashes at or near public or private grade crossings.

This safety recommendation is derived from the NTSB's investigation and is consistent with the evidence we found and the analysis we performed. Chairman HART, Vice Chairman DINH-ZARR, and Members SUMWALT and WEENER concurred in this recommendation.

The NTSB is vitally interested in this recommendation because it is designed to prevent accidents and save lives. We would appreciate receiving a response from you within 90 days detailing the actions you have taken or intend to take to implement it. When replying, please refer to the safety recommendation by number. We encourage you to submit your response electronically to correspondence@ntsb.gov.

[Original Signed]

By: Christopher A. Hart,
Chairman

National Transportation Safety Board

Washington, DC 20594

Safety Recommendation

Date: December 19, 2016

In reply refer to: H-16-15

Mr. David Abney
Chairman and Chief Executive Officer
United Parcel Service of America, Inc.
55 Glenlake Pkwy. NE
Atlanta, GA 30328

The National Transportation Safety Board (NTSB) is an independent federal agency charged by Congress with investigating every civil aviation accident in the United States and significant accidents in other modes of transportation—railroad, highway, marine, and pipeline. The NTSB determines the probable cause of the accidents and issues safety recommendations aimed at preventing future accidents. In addition, we carry out special studies concerning transportation safety and coordinate the resources of the federal government and other organizations to provide assistance to victims and their family members affected by major transportation disasters. We are providing the following information to urge United Parcel Service of America, Inc., to take action on the safety recommendation being issued in this letter.

On February 24, 2015, in the predawn hours, Metrolink commuter train 102, operated by Amtrak, was en route from Oxnard, California, to Los Angeles. As the train approached the South Rice Avenue grade crossing in Oxnard, it collided with a 2005 Ford F450 service truck towing a utility trailer.[1] The truck driver had inadvertently turned from South Rice Avenue onto the Union Pacific Railroad track, and the truck became lodged on the track. The train was occupied by three crew members and 51 passengers. After striking the truck and trailer, the train continued through the grade crossing, where all four coach cars subsequently derailed. The truck was pushed along the track and came to rest about 130 feet east of the grade crossing. A postcrash fire consumed the trailer. As a result of the crash, the train engineer died, and 32 passengers and crew members were injured. The truck driver sustained minor injuries. Additional information about this crash and the resulting recommendations may be found at our website, www.ntsb.gov, under report number NTSB/HAB-16/07.

[1] See *Train and Truck Crash on Railroad Right-of-Way and Subsequent Fire, Oxnard, California, February 24, 2015*, Highway Accident Brief NTSB/HAB-16/07 (Washington, DC: NTSB, 2016).

The truck driver used an application on his cell phone to navigate to his intended destination in Oxnard, in addition to handwritten directions provided by his employer. The crash occurred at 5:44 a.m., and the driver was fatigued and unfamiliar with the area. It is possible that he relied on the application to find his destination and subsequently misinterpreted the visual and audible cues available to him. At the time of the crash, the application did not include grade crossing data; thus, it provided no specific information on the grade crossing located parallel to, and just 57 feet from, East Fifth Street, the driver's intended route. We concluded that had the driver's navigation application included information on the upcoming grade crossing, he would have been less likely to misinterpret the visual cues and mistakenly turn onto the railroad tracks on his approach to the East Fifth Street intersection.

As a result of this investigation, we issued two new recommendations, including one to the North American Cartographic Information Society and the following recommendation to United Parcel Service of America, Inc., and 13 other companies:

H-16-15

> Incorporate grade crossing-related geographic data, such as those currently being prepared by the Federal Railroad Administration, into your navigation applications to provide road users with additional safety cues and to reduce the likelihood of crashes at or near public or private grade crossings.

This safety recommendation is derived from the NTSB's investigation and is consistent with the evidence we found and the analysis we performed. Chairman HART, Vice Chairman DINH-ZARR, and Members SUMWALT and WEENER concurred in this recommendation.

The NTSB is vitally interested in this recommendation because it is designed to prevent accidents and save lives. We would appreciate receiving a response from you within 90 days detailing the actions you have taken or intend to take to implement it. When replying, please refer to the safety recommendation by number. We encourage you to submit your response electronically to correspondence@ntsb.gov.

[Original Signed]

By: Christopher A. Hart,
Chairman