IN THE UNITED STATES DISTRICT COURT
FOR THE WESTERN DISTRICT OF TEXAS
WACO DIVISION

Quartz Auto Technologies LLC Plaintiff, v. Uber Technologies, Inc. Defendant.	Civil Action No. 6:20-cv-00126 The Honorable _____ **COMPLAINT FOR PATENT INFRINGEMENT** **JURY TRIAL DEMANDED**

COMPLAINT FOR PATENT INFRINGEMENT AND DEMAND FOR JURY TRIAL

TO THE HONORABLE JUDGE OF SAID COURT:

Plaintiff Quartz Auto Technologies LLC ("Quartz Auto"), files this Complaint for Patent Infringement and Damages against Defendant Uber Technologies, Inc. ("Uber" or "Defendant"), and would respectfully show the Court as follows:

PARTIES

1. Plaintiff Quartz Auto is a Delaware limited liability company with its principal place of business located at 301 S. Fremont Ave, Baltimore, MD 21230.

2. On information and belief, Defendant Uber is a Delaware corporation with its principal place of business located at 1455 Market Street, Suite 400, San Francisco, CA 94103. Uber is registered to conduct business in Texas, and may be served through its registered agent, CT Corporation System, 1999 Bryan Street, Suite 900, Dallas, Texas 75201-3136.

JURISDICTION AND VENUE

3. This is a civil action for patent infringement arising under the Patent Laws of the United States as set forth in 35 U.S.C. §§ 271, *et seq*.

4. This Court has federal subject matter jurisdiction over this action pursuant to 28 U.S.C. §§ 1331 and 1338(a) and pendant jurisdiction over the other claims for relief asserted herein.

5. This Court has personal jurisdiction over Defendant pursuant to TEX. CIV. PRAC. & REM. CODE § 17.041 *et seq*. Personal jurisdiction exists over Defendant because Defendant has minimum contacts with this forum as a result of business regularly conducted within the State of Texas and within this district, and, on information and belief, specifically as a result of, at least, committing the tort of patent infringement within Texas and this district. Personal jurisdiction also exists because, on information and belief, Defendant has: (1) operated the Internet website, https://www.uber.com/, and provided a mobile application (the "Uber app"), which is available to and accessed by ridesharing users, customers, and potential customers of the Defendant, both riders and drivers, within this judicial district; (2) operated within the judicial district, with ridesharing offered to users, customers, and potential customers of Defendant in locations including Austin, El Paso, San Antonio, and Waco; (3) actively advertised to residents within the District to hire more drivers; (4) transacted business within the State of Texas; (5) actively infringed and/or induced infringement of Plaintiff's patents in Texas; (6) established regular and systematic business contacts within the State of Texas; and (7) continue to conduct such business in Texas through the continued operation within the district. Accordingly, this Court's jurisdiction over the Defendant comports with the constitutional standards of fair play and substantial justice and arises directly from the Defendant's purposeful minimum contacts with the State of Texas.

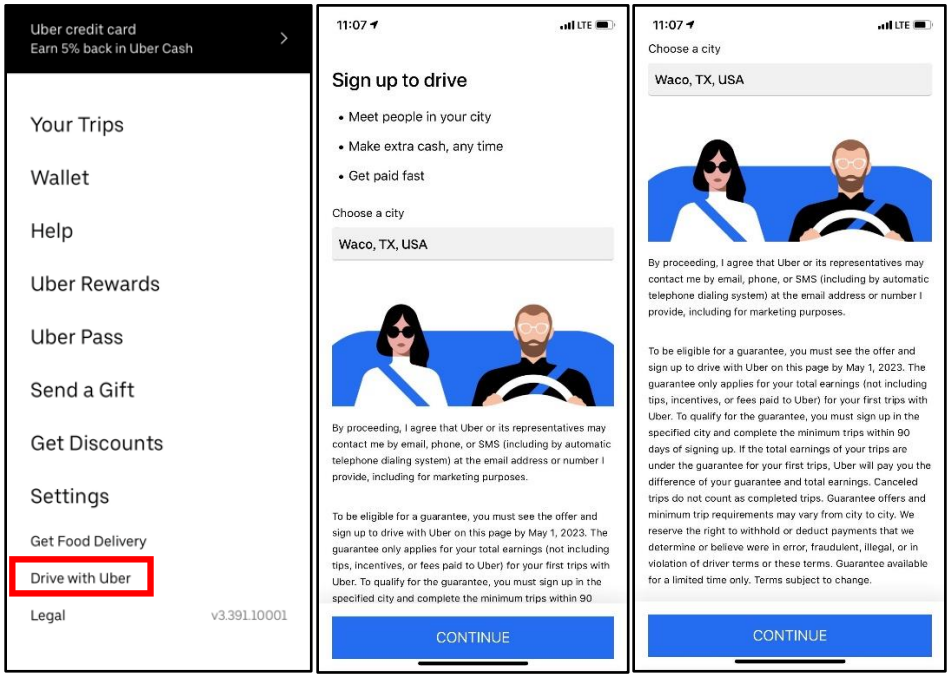
6. This Court also has personal jurisdiction over Defendant, because in addition to Defendant's own online website and advertising with this judicial district, Defendant has also made its ridesharing services available specifically within this judicial district via the following means:

a. Defendant offers ridesharing within the judicial district, in locations including

- Austin (https://www.uber.com/global/en/cities/austin/),
- El Paso (https://www.uber.com/global/en/cities/el-paso/),
- San Antonio (https://www.uber.com/global/en/cities/san-antonio/), and
- Waco (https://www.uber.com/global/en/cities/waco/).

b. Defendant actively advertises to district residents to hire more drivers within the district (for example, Austin: https://www.uber.com/drive/austin/where-to-drive/) and provides both nationwide and local perquisites to drivers (for example, Austin: https://www.uber.com/drive/austin/perks/).

c. Defendant actively promotes working for Uber to all, including district residents, who have downloaded the Uber ride/passenger application, as "Drive with Uber" is listed in the application drop down menu.



Uber Passenger Application Screenshots February 12, 2020

d. Defendant provides in-person support via "Uber Greenlight Hubs" within the Western District of Texas located in both Austin (507 Calles St. #120, Austin, TX 78702) and San Antonio (121 Interperk Blvd #501, San Antonio, TX 78216). These "Hubs" provide in-person Uber driver support.

e. Defendant has an office location in Austin (291 East 3rd St., Austin, TX 78701) with upwards of 90 employees, serving as a "Premier Hub" that supervises the regional operations for the states of TX, OK, LA, CO, UT, MO, and KS.

7. Defendant is subject to this Court's specific and general personal jurisdiction pursuant to due process and/or the Texas Long Arm Statute, due at least to Defendant's substantial business in this forum, including: (i) at least a portion of the infringements alleged herein; and/or (ii) regularly doing or soliciting business, engaging in other persistent courses of conduct, and/or deriving substantial revenue from goods and services provided to individuals in Texas and in this district.

8. Venue is proper in this Court under 28 U.S.C. §§ 1391(b) and (c) and 28 U.S.C. § 1400(b) based on the information and belief that the Defendant has committed or induced acts of infringement, and/or advertise, market, sell, and/or offer to sell products, including infringing products, in this judicial district. In addition, Defendant maintains numerous regular and established places of business in this district by providing its ridesharing service in, for example, Waco, Texas. In addition, Defendant maintains regular and established places of business in this district, as discussed in ¶6(d) and ¶6(e).

THE PATENTS-IN-SUIT

9. On September 3, 2002, United States Patent No. 6,446,004 ("the '004 patent"), entitled "System and Method for Implementing Proximity or Location Driven Activities" was duly

and legally issued by the United States Patent and Trademark Office ("USPTO") to Kevin Tung Cao, Daniel Alexander Ford, and Reiner Kraft, with the International Business Machines Corporation ("IBM") as assignee. A copy of the '004 patent is attached hereto as **Exhibit A**.

10. On October 19, 2004, United States Patent No. 6,807,464 ("the '464 patent"), entitled "Systems and Methods for Distributing Information to an Operator of a Vehicle" was duly and legally issued by the USPTO to Philip Shi-lung Yu, David P. Greene, Edith H. Stern, and Barry E. Willner, with IBM as assignee. A copy of the '464 patent is attached hereto as **Exhibit B**.

11. On May 6, 2008, United States Patent No. 7,370,085 ("the '085 patent"), entitled "Method, System, and Program for Providing User Location Information with a Personal Information Management Program" was duly and legally issued by the USPTO to Michael Wayne Brown, Rabindranath Dutta, and Michael A. Paolini, with IBM as assignee. A copy of the '085 patent is attached hereto as **Exhibit C.**

12. On June 7, 2011, United States Patent No. 7,958,215 ("the '215 patent"), entitled "System Management Using Real Time Collaboration" was duly and legally issued by the USPTO to David Gerard Herbeck and Susette Marie Townsend, with IBM as assignee. A copy of the '215 patent is attached hereto as **Exhibit D**.

13. On October 4, 2016, United States Patent No. 9,460,616 ("the '616 patent"), entitled "Management of Mobile Objects and Service Platform for Mobile Objects" was duly and legally issued by the USPTO to Tomohiro Miyahira and Gaku Yamamoto, with IBM as assignee. A copy of the '616 patent is attached hereto as **Exhibit E**.

14. On June 27, 2017, United States Patent No. 9,691,275 ("the '275 patent"), entitled "Adjusting Vehicle Timing in a Transportation Network" was duly and legally issued by the USPTO to Tobias Ephraim Dannat, Andreas Kuechmichel, Tim Scheideler, Matthias Seul, and

Thomas Allen Snellgrove, with IBM as assignee. A copy of the '275 patent is attached hereto as **Exhibit F**.

15. The '004, '464, '085, '215, '616, and '275 patents are referred to hereinafter as the "Quartz Auto Patents."

16. Plaintiff Quartz Auto Technologies LLC is the owner of the entire right, title, and interest in and to the Quartz Auto Patents. The Quartz Auto Patents were originally owned by IBM and, through predecessors in interest that were duly recorded in the U.S. Patent Office, were ultimately assigned to Quartz Auto on or about February 13, 2020 and February 14, 2020, and recorded in the Patent Office, with all rights, titles, and interests in and to the patents assigned to Quartz Auto. Each of the Quartz Auto Patents are presumed valid under 35 U.S.C. § 282.

United States Patent No. 6,446,004

17. The '004 patent claims a system and associated method for implementing a proximity driven activity. In one embodiment, the system and an associated method of the '004 patent allow requests to be executed at some point in the future without specifying the exact time or necessarily a precise location. The execution time of the request is linked to the arrival of a person at, or near, a geographic location or destination. When a person arrives at that location, or comes within a proximity threshold distance of that location, the request to interact will be executed. The proximity threshold "can be adjustable and programmable" (col. 2, lines 6-7). A "mobile computing device" may be, for example, a personal computer, a personal digital assistant, and preferably possesses a wireless means of communication. In the present complaint, Defendant's ride-hailing system and method infringe on these inventive aspects of the '004 patent by, for example, using both passenger and driver applications that input, collect, and transmit such proximity driven activity between the passenger and the driver, and vice versa. Here, the Uber

applications, installed and used on mobile computing devices (most often wireless mobile phones), collect a passenger's current location and inputted destination and executes software code to determine which driver is within the proximity threshold to complete the passenger's request. The passenger's current location and inputted destination is then transmitted through the Uber application to the driver's mobile device.

18. The '004 patent overcomes shortcomings in the prior art, which were ineffective at integrating location positioning (col. 1, lines 36-40) into functional applications in the areas of GPS and mobile computing. Certain of the inventive aspects of the '004 patent addressed the need for improvements in the area of location dependent data processing, by developing software for use with a mobile computing device combined with a global positioning system locator (col. 1, lines 16-24). More specifically, the inventive aspects of executing an activity linked to the arrival of a person at or near a geographic location or destination, which is dependent on a mobile computing device and the calculated current location and destination of the mobile device (col. 1, lines 61-67), were not well-understood, routine, or conventional at the time of the invention.

United States Patent No. 6,807,464

19. In one embodiment, the '464 patent claims a method and associated system of distributing vehicle control information by determining at a controller location the vehicle control information associated with the location of the vehicle and vehicle operator, and then arranging the information to provide an indication to the vehicle operator. Such "vehicle control information" may refer to any information that can be used by an operator with respect to a vehicle, and may be provided to the operator, for example, via text information, image information, audio information, dashboard information, and/or HUD information. In the present complaint, Defendant's ride-hailing system and method infringe on these inventive aspects of the '464 patent

by, for example, using both passenger and driver applications that communicate such vehicle control information between the passenger and the driver, and vice versa. In this embodiment, the Ride (passenger) application serves as the controller, while the Drive (driver) application serves as the operator, and the requisite information is provided by text, image, and audio, as needed.

20. The ‘464 patent overcomes shortcomings in the prior art, which required information be presented through traditional signage and traffic signals placed along roads (col. 1, lines 20-21). The prior art is not an effective means to disseminate all kinds of information (col. 1, lines 39-46). Certain of the inventive aspects of the ‘464 patent addressed the need for improvements in the area of distributing information to the operator of a vehicle, by better facilitating the dissemination of information via a vehicle device (col. 2, lines 1-5). More specifically, the inventive aspects of collecting vehicle control information and distributing the information to the individual vehicle device for a plurality of vehicles (col. 13, lines 55-67), were not well-understood, routine, or conventional at the time of the invention.

United States Patent No. 7,370,085

21. The ‘085 patent claims a method for providing user location information for a personal information management (PIM) program by generating position coordinates of a wireless device with related time information. Additionally, the ‘085 patent claims another method for generating a calendar for a PIM program by receiving a time interval and determining position coordinates of a wireless device in order to display a user’s activity with the corresponding time. In one embodiment, the ‘085 patent then determines whether a rate of change in distance between position coordinates at designated times indicates user’s activity during the activity time period, and then generates information on the predefined activity. A PIM client gathers and presents PIM information, such as calendaring and scheduling information, in accordance with the described

implementations. A PIM refers to a program designed to allow users to organize random bits of information in a useful format (col. 4, lines 27-33). In the present complaint, Defendant's ride-hailing system and method infringe on these inventive aspects of the '085 patent. For example, Defendant's use of geographical reference data to depict various drivers in the vicinity of a potential passenger on its Uber application fits one definition of gathering and presenting information on a PIM.

22. The '085 patent overcomes shortcoming in the prior art, which provided users of wireless computing (such as personal information managers) or handheld computers (such as cellular phones) significantly limited versions of programs and functions normally available on desktop computers (col. 1, lines 56-61). Certain of the inventive aspects of the '085 patent addressed the need for an application that could more fully exploit wireless computing technology and extend the utility beyond that of a portable telephone and limited personal information manager (col. 2, lines 5-10). These aspects were not well-understood, routine, or conventional at the time of the invention.

United States Patent No. 7,958,215

23. The '215 patent claims a number of variations of computer-implemented embodiments for responding to a condition/alert (for example, needing a ride) and managing an information technology device.

a. Claim 1 of the '215 patent claims a method for responding to a problem condition, which automatically detects the availability of the first candidate to respond to the problem condition, responds to the detection, automatically assigns to the first candidate the responsibility for the problem condition, and then receives confirmation that the candidate has accepted responsibility.

b. Claim 5 of the '215 patent claims a method for managing an information technology device, which receives an alert from a device and receives availability information of a plurality of candidates, automatically selects a qualified and available candidate to take responsibility for the alert, and then receives a reply from the candidate indicating acceptance of responsibility.

c. Claim 14 of the '215 patent claims a method for managing an information technology device, which receives an alert from the device, automatically selects a qualified candidate and determines candidates' availability to respond to the alert, automatically sends an instant message to the candidate containing information about the alert, receives a reply from the candidate indicating acceptance of responsibility, and then automatically assigns responsibility for the alert to the candidate.

d. Claim 17 of the '215 patent claims a method for assigning responsibility for responding to a condition in an information technology device, which receives an alert from a monitored device describing an event in the device, automatically detects an available administrator qualified to respond to the event, automatically sends a first instant message to the available administrator that references the alert and requests acknowledgment, receives a second instant message from the administrator acknowledging the event, and then automatically assigns responsibility for the event to the administrator.

In particular, the '215 patent relates to management methods and systems using real-time collaboration and instant messaging technology (col. 1, lines 5-10). In the present complaint, Defendant's ride-hailing system and method infringe on these inventive aspects of the '215 patent. For example, Defendant monitors alerts/conditions (ride requests) from passengers through the

Uber Application (on a device) and automatically determines the availability of a plurality of drivers (candidates/administrators) to respond to the passenger's request. Once driver location, availability, and qualification (for example, possession of driver's license; vehicle type; vehicle make; vehicle year; vehicle comfort level; passenger comfort level; passenger rating; driver rating; etc.) are determined, the drivers are automatically notified via their Uber Applications, they respond, and then one driver is automatically assigned to handle the passenger's alert. The Uber Applications (passenger application to Uber server to driver application, and vice versa), use real-time collaboration and messaging technology to manage alerts and assign responsibility.

24. The '215 patent overcomes shortcomings in the prior art, which failed to properly ensure responses to alerts and conditions in a cost effective and timely fashion (col. 1, lines 24-62). Certain of the inventive aspects of the '215 patent address the need for ensuring and assigning real time responses to alerts and conditions from qualified and available candidates (col.1, lines 65-67, col. 2, lines 1-62). Such method and aspects were not well-understood, routine, or conventional at the time of the invention.

United States Patent No. 9,460,616

25. In one embodiment, the '616 patent claims a system comprising a mobile object server that receives information from a plurality of mobile objects within a geographic space and performs a process associated with each mobile object. A notification is provided if one mobile object has become distanced from a predetermined location or region. The mobile objects may be manned/unmanned automobiles, motorbikes, bicycles, humans having a digital device, airplanes, vessels, drones, or the like (col. 2, lines 41-43). In the present complaint, Defendant's ride-hailing system and method infringe on these inventive aspects of the '616 patent. For example, Defendant monitors its drivers (mobile objects) via its central servers (mobile object server), with each of the

plurality of drivers in a geographic area providing information which is received at the Defendant's servers. Such information from the drivers may include information about accidents, obstructions, closures, limitation statuses, or construction on the road. Defendant's servers monitor the progress/location of the driver, and perform a process of updating the navigation information provided to the driver via the Uber Nav, Google Maps, or Waze navigation applications, with updated estimated times of arrival based on the speed, current traffic, and other considerations encountered by the Uber driver.

26. The '616 patent overcomes shortcomings in the prior art, which failed to account for the inherent problem that as the geographic space being handled expands, the number of automobiles and the number of roads increases, thereby increasing the amount of information being sent and received to a level that surpasses the processing capabilities of the server, nor allows different information and services to be provided to each automobile and driver in real time (col. 1, lines 17-25). Certain of the inventive aspects of the '616 patent addressed the need for improvements in managing the geographic space and mobile objects within the geographic space (col. 27, lines 49-52). These aspects were not well-understood, routine, or conventional at the time of the invention.

United States Patent No. 9,691,275

27. In one embodiment, the '275 patent claims a method for obtaining passenger information of one or more passengers traveling with a transportation network, wherein the passenger information includes passenger location information. The '275 patent then processes the passenger location information to determine an adapted timetable for providing a reduced cumulative wait time. In the present complaint, Defendant's ride-hailing system and method infringe on these inventive aspects of the '275 patent. For example, Defendant used a passenger

app and a driver app in communication via central Uber servers, to successfully implement its ride-hailing system. When the passenger opens the application and selects a destination, the passenger's GPS location information is automatically recorded, and the passenger location information is sent through the Uber server to drivers in the vicinity of the potential pick up location. Uber uses batch matching to balance the passenger demand and cumulative wait times.

28. The '275 patent overcomes shortcomings in the prior art by providing and processing passenger location information to reduce wait times in a transportation network. The transportation network can include a variety of different types of transportation vehicles, including, for example, trains, buses, and planes (col. 1, lines 12-16). Certain of the inventive aspects of the '275 patent address the need for improvements in transportation networks by obtaining passenger location information, in order to improve and adjust vehicle timetables (col. 1, lines 5-8; lines 25-33). These aspects were not well-understood, routine, or conventional at the time of the invention. The techniques disclosed in the patent allow for optimization of vehicle and/or passenger flow in a transportation network, and can be useful in reducing cumulative wait times for passengers and relieving unwanted passenger congestion within a transportation network (col. 3, lines 37-46).

The Uber Application

29. On information and belief, Defendant uses the Uber network/server in combination with the Uber ride/passenger application and the Uber drive/driver application to operate ride-hailing services. For the purposes of this complaint, the term "Uber app" encompasses all such functionalities and any related Uber technologies that interface with the Uber app to provide ride-hailing services.

a. On information and belief, Uber operates a network/server infrastructure with its riders/passengers and drivers.

b. On information and belief, Uber operates and provides a "Ride" application that, among other things, allows Uber passengers/customers to request a ride. For the purposes of this complaint, passenger application/app and ride application/app, as well as any different, unambiguous iterations, are used interchangeably.

c. On information and belief, Uber operates and provides a "Drive" application that, among other things, allows Uber drivers to accept ride requests and perform related activities. For the purposes of this complaint, driver application/app and drive application/app, as well as any different, unambiguous iterations, are used interchangeably.

COUNT I
PATENT INFRINGEMENT OF THE '004 PATENT

30. Plaintiff Quartz Auto repeats and realleges the above paragraphs, which are incorporated by reference as if fully restated herein.

31. Plaintiff Quartz Auto is the owner of all rights, title, and interest in the '004 patent.

32. Plaintiff Quartz Auto and its predecessors in interest have never licensed to the Defendant under the '004 patent, nor has Plaintiff Quartz Auto otherwise authorized the Defendant to practice any part of the '004 patent.

33. The '004 patent is presumed valid under 35 U.S.C. §282.

34. The '004 patent relates to, among other things, a system and method for implementing proximity or location driven activities.

35. On information and belief, Defendant operates a ride-hailing service that uses a passenger and driver application that collects current location and destination in order to execute a proximity-driven activity.

36. **Direct Infringement:** On information and belief, Defendant has directly infringed and continues to directly infringe, either literally or under the doctrine of equivalents, one or more claims of the '004 patent, including for example (but not limited to) at least method claims 1-11, system claims 12-22, and computer program claims 23-33 of the '004 patent by making, using, distributing, providing, supplying, selling, offering to sell without license or authority Defendant's application that include infringing features. The infringing products include applications that can be used on a variety of mobile computing devices and gather and transmit location-specific information. A detailed infringement claim mapping is provided in paragraphs 41-48 and paragraphs 49-53 below.

37. **Induced Infringement:** On information and belief, Defendant has and continues to promote, advertise, and instruct current drivers and riders, and potential drivers and riders about Uber products, such as:

(i) Defendant's Drive or Ride downloadable applications for Android and Apple systems ((Android: https://play.google.com/store/apps/details?id=com.ubercab&hl=en_US) and (Apple: (https://apps.apple.com/us/app/uber/id368677368)),

(ii) an overview of how to use Uber's branded products (https://www.uber.com/us/en/ride/), including instructions for riders to use the services (https://www.uber.com/us/en/ride/how-it-works/), and

(iii) requirements for drivers to sign-up (https://www.uber.com/us/en/drive/requirements/).

Defendant's promotion, advertising, and instruction efforts include, at a minimum, maintenance of its own website http://www.uber.com, the production and distribution of instruction manuals, Frequently Asked Questions (FAQs) and how-to videos on the

website, and other indicia of Uber branded products. (https://www.uber.com/us/en/ride/ and https://www.uber.com/us/en/drive/).

Defendant's software applications require both the rider and the driver to download the software applications for mobile computing devices, such as smartphones, laptops, and tablets, which enable Uber to completely control the actions of both the riders and the drivers to use the infringing features of the products and methods for ride-hailing. On information and belief, Defendant continues to engage in these acts with knowledge of the '004 patent by the filing of this Complaint, and with the actual intent to cause the acts which it knew or should have known would induce actual infringement.

38. Defendant Uber has infringed the '004 patent by making, having made, using, importing, providing, supplying, distributing, selling, or offering for sale systems utilizing a method for implementing proximity driven activities.

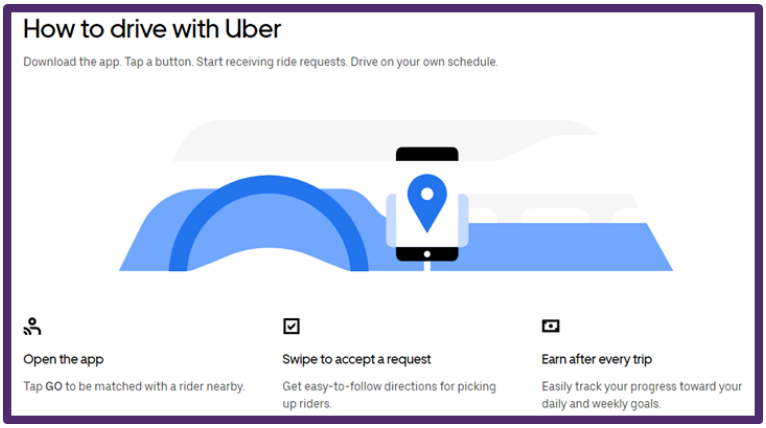
39. The '004 patent is well known in the industry – having been cited in at least 159 cited patents since its filing date.

40. **Detailed Mapping of Direct Infringement:** On information and belief, infringement of the '004 patent by these Uber ride-hailing products and applications is demonstrated below.

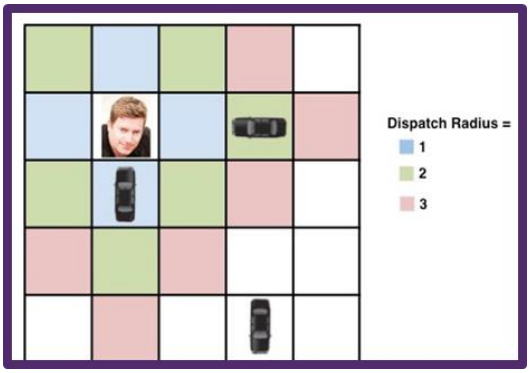
41. Method claim 1 of the alleged claims:

1. A method of implementing a proximity driven activity, comprising:
specifying an activity to be executed at an indeterminate destination location;
storing an executable software code corresponding to the activity;
determining a current location of a mobile computing device;
determining whether the destination location is within a predefined proximity range from the current location of the mobile computing device;
executing the executable software code at a time when the destination location is within the proximity range of the mobile computing device; and
transmitting an address of the destination location to the mobile computing device.

42. On information and belief, the Uber application or Uber Network, which includes the passenger application, driver application, Uber server, and all related technology (hereinafter, "Uber App") performs a method of implementing a proximity driven activity.



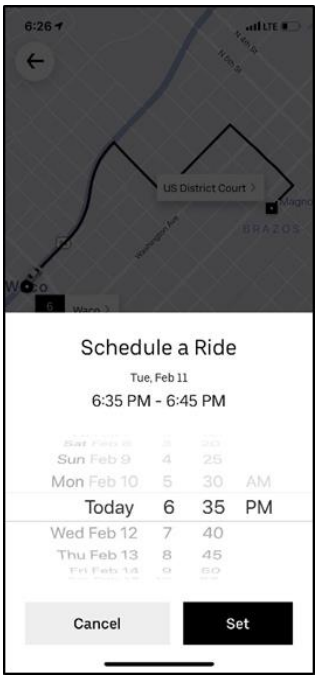
https://www.uber.com/us/en/drive/how-it-works/



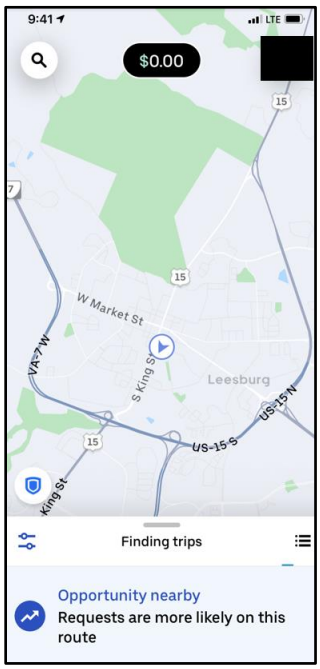
> "We want to figure out how to optimize the dispatch radius, the farthest distance between a passenger and driver where we'll allow a request to go through. This radius is different for each city, and it probably changes as a function of time as well."

https://www.uber.com/newsroom/semi-automated-science-using-an-ai-simulation-framework/

43. On information and belief, the Uber App specifies an activity to be executed at an indeterminate destination location.



Uber Passenger Application Screenshot February 11, 2020



Uber Driver Application Screenshot February 14, 2020

> "When that rider selects a product, the request goes to our dispatch system, which matches the rider with a driver-partner and assigns their vehicle to that trip. When the driver-partner picks up the rider, their app sends a 'pickup completed' event to the dispatch system, effectively starting the trip. When the driver reaches their destination and indicates that the passenger has been dropped off in their app, it sends a 'trip completed' event.
>
> A typical trip lifecycle like this might span across six distinct event streams, with events generated by the rider app, driver app, and Uber's back-end dispatch server. These distinct event streams thread into a single Uber trip."

https://eng.uber.com/sessionizing-data/

44. On information and belief, the Uber App stores an executable software code corresponding to the activity.

```
curl -X POST -H "Authorization: Bearer <TOKEN>" \ -H
"Content-Type: application/json" -d \ '{"product_id":
"821415d8-3bd5-4e27-9604-194e4359a449",
"start_latitude":"37.775232", "start_longitude": "-
122.4197513", "end_latitude":"37.7899886", "end_longitude":
"-122.4021253","seat_count": "2"}' \
https://api.uber.com/v1.2/requests/estimate
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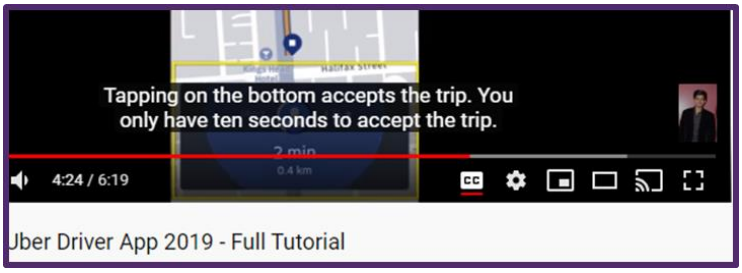
https://developer.uber.com/docs/riders/ride-requests/tutorials/api/curl

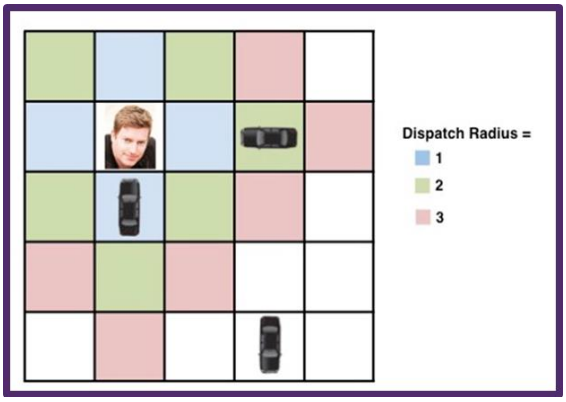


https://www.youtube.com/watch?v=5rtCduqp6wI

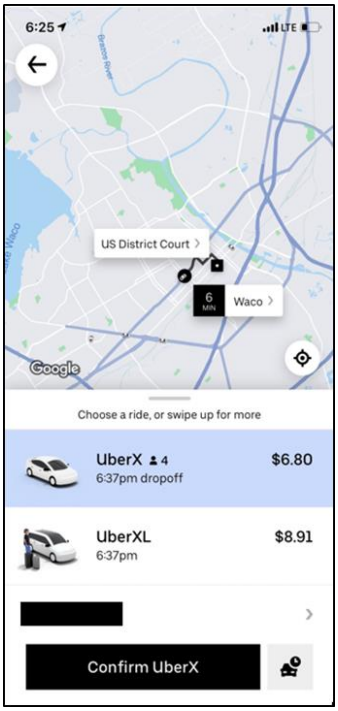
> "When that rider selects a product, the request goes to our dispatch system, which matches the rider with a driver-partner and assigns their vehicle to that trip. When the driver-partner picks up the rider, their app sends a 'pickup completed' event to the dispatch system, effectively starting the trip. When the driver reaches their destination and indicates that the passenger has been dropped off in their app, it sends a 'trip completed' event.
>
> A typical trip lifecycle like this might span across six distinct event streams, with events generated by the rider app, driver app, and Uber's back-end dispatch server. These distinct event streams thread into a single Uber trip."

https://eng.uber.com/sessionizing-data/

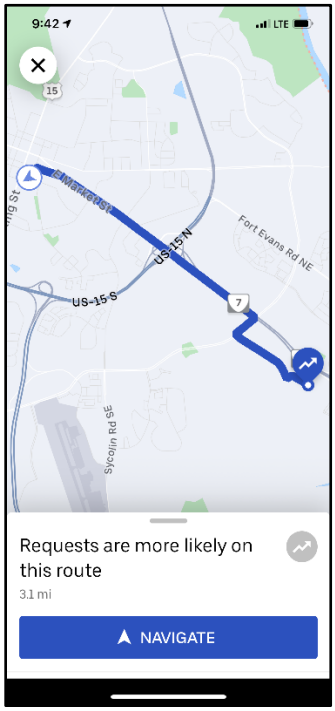
45. On information and belief, the Uber App determines a current location of a mobile computing device.



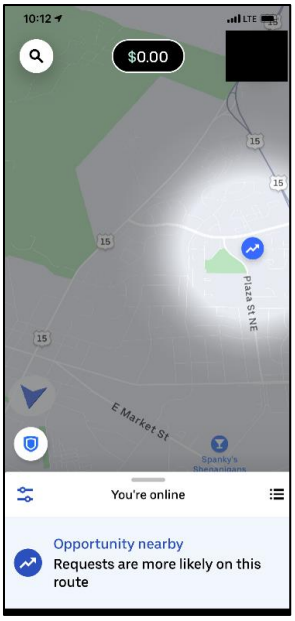
https://www.uber.com/newsroom/semi-automated-science-using-an-ai-simulation-framework/



Uber Passenger Application Screenshot February 11, 2020

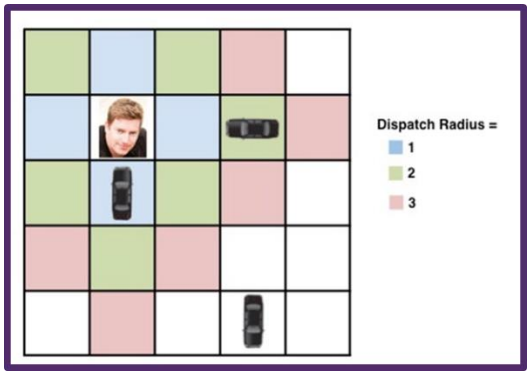


Uber Driver Application Screenshot February 14, 2020

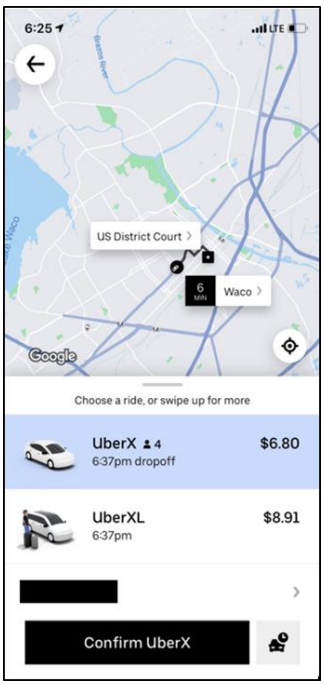


Uber Driver Application Screenshot February 14, 2020

46. On information and belief, the Uber App determines whether the destination location is within a predefined proximity range from the current location of the mobile computing device.



https://www.uber.com/newsroom/semi-automated-science-using-an-ai-simulation-framework/



Uber Passenger Application Screenshot February 11, 2020

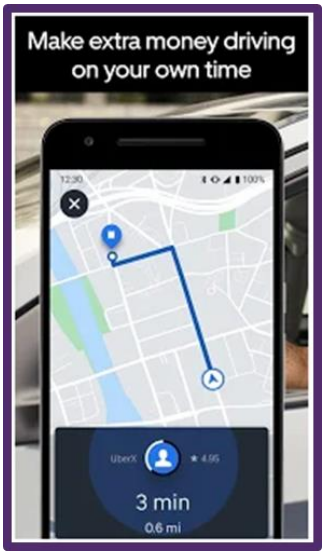
> "For instance, when requests are in the processing state, it's best to let the rider know Uber is attempting to find a driver. Using a spinner or other loading indicator conveys this message well."

https://developer.uber.com/docs/riders/ride-requests/tutorials/api/curl

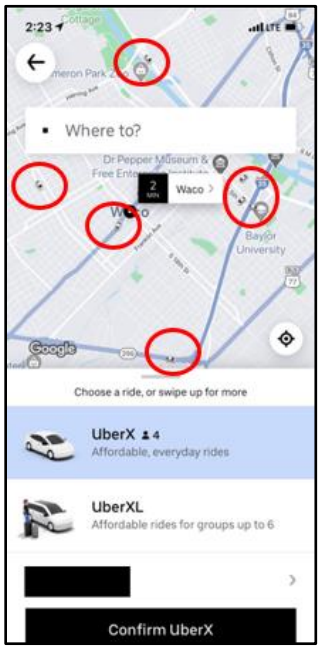
> There are optimal dispatch distances for pairing a driver with a passenger, and there are optimal behaviors for drivers to take between trips. When dispatch distances are very short drivers should navigate back toward demand density. However when dispatch distances are relatively longer, drivers maximize their earnings by using less gas by remaining stationary between trips.

https://www.uber.com/newsroom/semi-automated-science-using-an-ai-simulation-framework/

47. On information and belief, the Uber App executes the executable software code at a time when the destination location is within the proximity range of the mobile computing device.

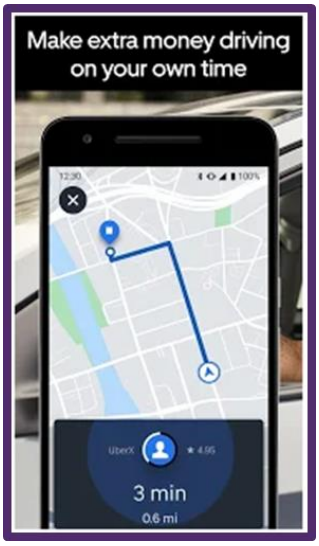


https://play.google.com/store/apps/details?id=com.ubercab.driver&hl=en



Uber Passenger Application Screenshot February 13, 2020 *(emphasis added in red)*

48. On information and belief, the Uber App transmits an address of the destination location to the mobile computing device.



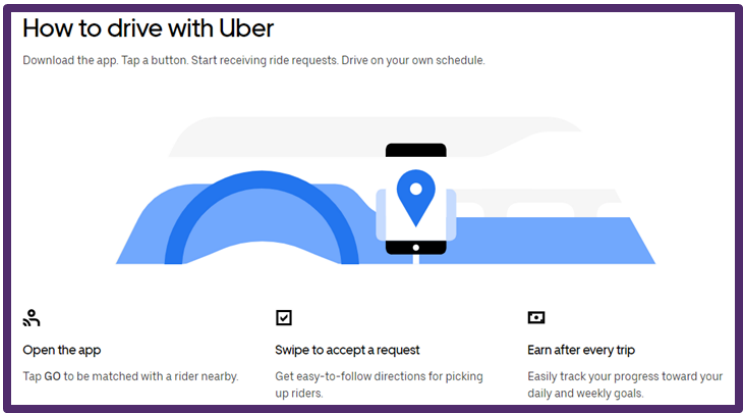
"Turn-by-turn directions
The app makes it easy to find your customer and navigate to their destination."

https://play.google.com/store/apps/details?id=com.ubercab.driver&hl=en
https://www.uber.com/us/en/drive/driver-app/

49. System claim 12 of the alleged claims is provided below (and system claim 12 is also taken as representative of breadth of computer program product claim 23):

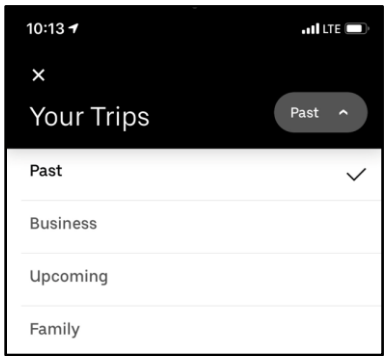
> 12. A system for implementing a proximity driven activity, comprising:
> a calendar module for specifying an activity to be executed at an indeterminate destination location;
> a server for storing an executable software code corresponding to the activity and for determining a current location of a mobile computing device; and
> the server determining whether the destination location is within a predefined proximity range from the current location of the mobile computing device, and, when the server determines that the destination location is within the proximity range of the mobile computing device, the server executes the executable software code, and transmits an address of the destination location to the mobile computing device.

50. On information and belief, the Uber application or Uber Network, which includes the passenger application, driver application, Uber server, and all related technology (hereinafter, "Uber App") performs a system of implementing a proximity driven activity.

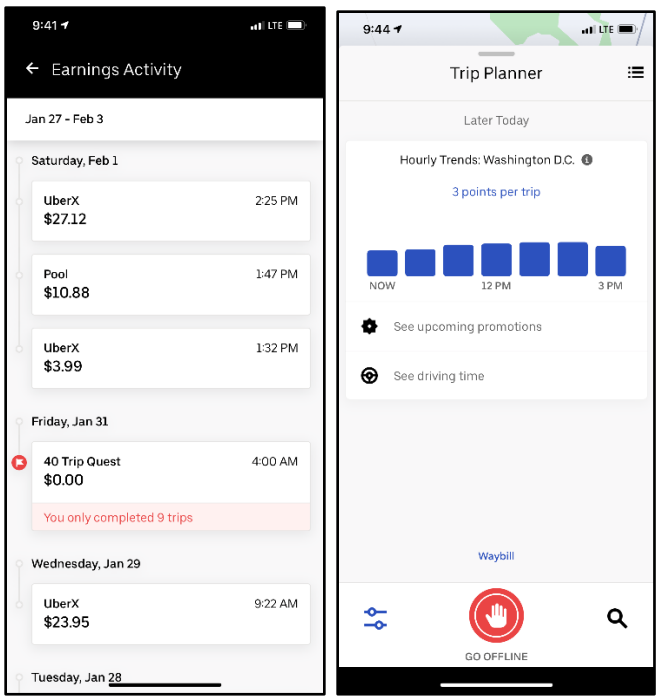


https://www.uber.com/us/en/drive/how-it-works/

51. On information and belief, the Uber App uses a calendar module for specifying an activity to be executed at an indeterminate destination location.



Uber Passenger Application Screenshot February 12, 2020

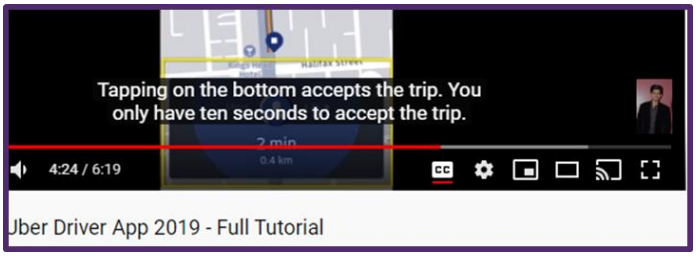


Uber Driver Application Screenshot February 14, 2020

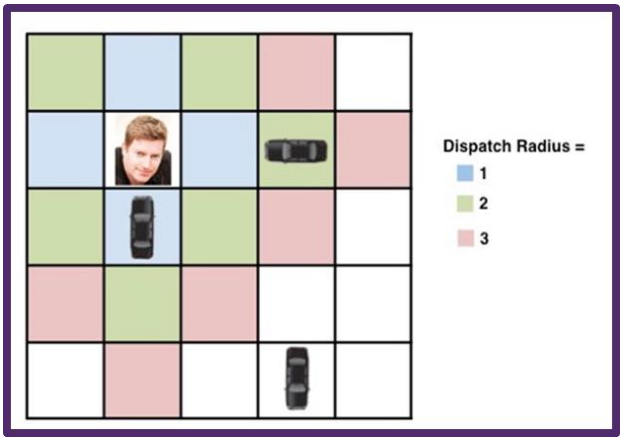
52. On information and belief, the Uber App uses a server for storing an executable software code corresponding to the activity and for determining a current location of a mobile computing device.

```
curl -X POST -H "Authorization: Bearer <TOKEN>" \ -H
"Content-Type: application/json" -d \ '{"product_id":
"821415d8-3bd5-4e27-9604-194e4359a449",
"start_latitude":"37.775232", "start_longitude": "-
122.4197513", "end_latitude":"37.7899886", "end_longitude":
"-122.4021253","seat_count": "2"}' \
https://api.uber.com/v1.2/requests/estimate
```

https://developer.uber.com/docs/riders/ride-requests/tutorials/api/curl

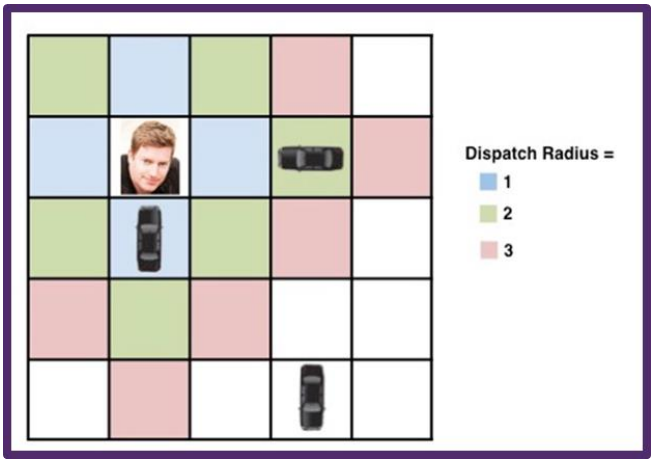


https://www.youtube.com/watch?v=5rtCduqp6wI

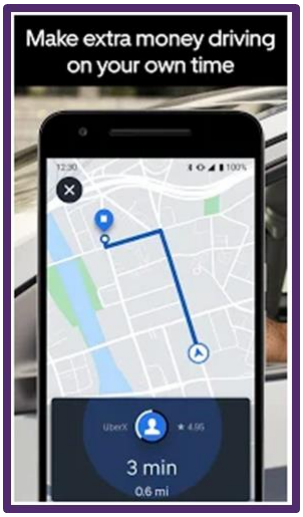


https://www.uber.com/newsroom/semi-automated-science-using-an-ai-simulation-framework/

53. On information and belief, the Uber App server determines whether the destination location is within a predefined proximity range from the current location of the mobile computing device, and, when the server determines that the destination location is within the proximity range of the mobile computing device, the server executes the executable software code, and transmits an address of the destination location to the mobile computing device.



https://www.uber.com/newsroom/semi-automated-science-using-an-ai-simulation-framework/



"Turn-by-turn directions
The app makes it easy to find your customer and navigate to their destination."

https://play.google.com/store/apps/details?id=com.ubercab.driver&hl=en
https://www.uber.com/us/en/drive/driver-app/

"For instance, when requests are in the processing state, it's best to let the rider know Uber is attempting to find a driver. Using a spinner or other loading indicator conveys this message well."

https://developer.uber.com/docs/riders/ride-requests/tutorials/api/curl

There are optimal dispatch distances for pairing a driver with a passenger, and there are optimal behaviors for drivers to take between trips. When dispatch distances are very short drivers should navigate back toward demand density. However when dispatch distances are relatively longer, drivers maximize their earnings by using less gas by remaining stationary between trips.

https://www.uber.com/newsroom/semi-automated-science-using-an-ai-simulation-framework/

54. On information and belief, Defendant's actions have and continue to constitute active inducing infringement of at least method claims 1-11, system claims 12-22, and computer program claims 23-33 of the '004 patent in violation of 35 U.S.C. §271(b).

55. As a result of Defendant's infringement of at least method claims 1-11, system claims 12-22, and computer program claims 23-33 of the '004 patent, Plaintiff Quartz Auto has suffered monetary damages in an amount yet to be determined, and will continue to suffer damages in the future unless Defendant's infringing activities are enjoined by this Court. Defendant is liable

to Plaintiff in an amount that adequately compensates for such infringements, which, by law, cannot be less than a reasonable royalty, together with interest and costs as fixed by this Court under 35 U.S.C. § 284.

56. Defendant's wrongful acts have damaged and will continue to damage Plaintiff Quartz Auto irreparably, and Plaintiff has no adequate remedy at law for those wrongs and injuries. In addition to its actual damages, Plaintiff Quartz Auto is entitled to a permanent injunction restraining and enjoining Defendant and its agents, servants, and employees, and all person acting thereunder, in concert with, or on its behalf, from infringing at least method claims 1-11, system claims 12-22, and computer program claims 23-33 of the '004 patent.

COUNT II
PATENT INFRINGEMENT OF THE '464 PATENT

57. Plaintiff Quartz Auto repeats and realleges the above paragraphs, which are incorporated by reference as if fully restated herein.

58. Plaintiff Quartz Auto is the owner of all rights, title, and interest in the '464 patent.

59. Plaintiff Quartz Auto and its predecessors in interest have never licensed to the Defendant under the '464 patent, nor has Plaintiff Quartz Auto otherwise authorized the Defendant to practice any part of the '464 patent.

60. The '464 patent is presumed valid under 35 U.S.C. §282.

61. The '464 patent relates to, among other things, systems and methods for distributing information to the operator of a vehicle.

62. On information and belief, Defendant operates a ride-hailing service that uses a passenger and driver application that distributes information to the operator of a vehicle.

63. **Direct Infringement:** On information and belief, Defendant has directly infringed and continues to directly infringe, either literally or under the doctrine of equivalents, one or more

claims of the '464 patent, including for example (but not limited to) at least method claims 1-19 and system claims 20-22 of the '464 patent by making, using, distributing, providing, supplying, selling, offering to sell without license or authority Defendant's application that include infringing features. The infringing products include applications that can be used on a variety of remote computing devices and gather and transmit location-specific information. This is without Plaintiff Quartz Auto's authorization, in violation of 35 U.S.C. § 271(a). A detailed infringement claim mapping is provided in paragraphs 68-73 and paragraphs 74-76 below.

64. **Induced Infringement:** On information and belief, Defendant has and continues to promote, advertise, and instruct current drivers and riders, and potential drivers and riders about Uber products, such as:

(i) Defendant's Drive or Ride downloadable applications for Android and Apple systems ((Android: https://play.google.com/store/apps/details?id=com.ubercab&hl=en_US) and (Apple: (https://apps.apple.com/us/app/uber/id368677368)),

(ii) an overview of how to use Uber's branded products (https://www.uber.com/us/en/ride/), including instructions for riders to use the services (https://www.uber.com/us/en/ride/how-it-works/), and

(iii) requirements for drivers to sign-up (https://www.uber.com/us/en/drive/requirements/). Defendant's promotion, advertising, and instruction efforts include, at a minimum, maintenance of its own website http://www.uber.com, the production and distribution of instruction manuals, Frequently Asked Questions (FAQs) and how-to videos on the website, and other indicia of Uber branded products. (https://www.uber.com/us/en/ride/ and https://www.uber.com/us/en/drive/).

Defendant's software applications require both the rider and the driver to download the software applications for mobile computing devices, such as smartphones, laptops, and tablets, which enables Uber to completely control the actions of both the riders and the drivers to use the infringing features of the products and methods for ride-hailing. On information and belief, Defendant continues to engage in these acts with knowledge of the '464 patent by the filing of this Complaint, and with the actual intent to cause the acts which it knew or should have known would induce actual infringement.

65. Defendant Uber has infringed the '464 patent by making, having made, using, importing, providing, supplying, distributing, selling, or offering for sale systems utilizing a method for managing data.

66. The '464 patent is well known in the industry – having been cited in at least 64 cited patents since its filing date

67. **Detailed Mapping of Direct Infringement:** On information and belief, infringement of the '464 patent by these Uber ride-hailing products and applications is demonstrated below.

68. Method claim 1 of the alleged claims:

> 1. A method of distributing vehicle control information, comprising:
> determining at a controller located at a location vehicle control information associated with the location and with an operator of a vehicle;
> transmitting the vehicle control information to a vehicle device;
> receiving the vehicle control information at the vehicle device; and
> arranging at the vehicle device for an indication to be provided to the operator in accordance with the vehicle control information.

69. On information and belief, the Uber application or Uber Network, which includes the passenger application, driver application, Uber server, and all related technology (hereinafter, "Uber App") performs a method of distributing vehicle control information.

> "In cities where Uber is available, you can use the Uber app to request a ride. When a nearby driver accepts your request, the app displays an estimated time of arrival for the driver heading to your pickup location. The app will notify you when the driver is about to arrive.
>
> The Uber app also provides info about the driver with whom you will ride, including first name, vehicle type, and license plate number. This info helps the two of you connect at your pickup location.
>
> Use the app to enter your preferred destination anytime before or during the ride. If you have a preferred route, it's helpful to talk through the directions with the driver."

https://help.uber.com/riders/article/how-does-uber-work?nodeId=738d1ff7-5fe0-4383-b34c-4a2480efd71e

70. On information and belief, the Uber App determines at a controller located at a location vehicle control information associated with the location and with an operator of a vehicle.

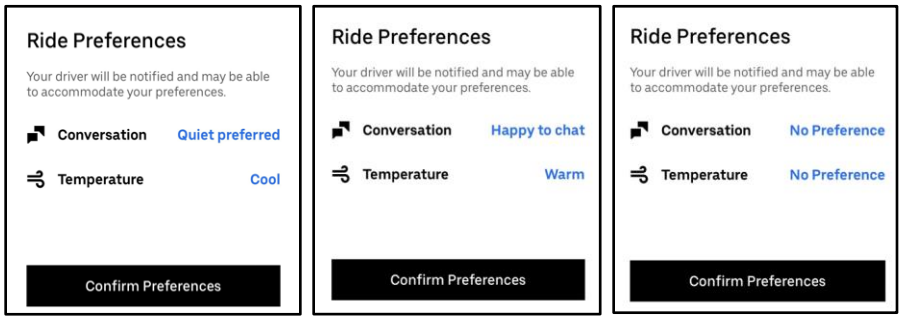
> "The Uber app for iOS uses the CoreLocation framework to locate a user's device. The CoreLocation framework provides classes and protocols to configure and schedule location delivery and send location events to the server. The CoreLocation framework also lets Uber define geographic regions and monitor a device's movements as it crosses defined boundaries.
>
> Geolocation for the Android version of the Uber app was implemented using Google's Location APIs. They can intelligently manage underlying location technology while meeting various development needs when implementing location-based features."

https://www.quora.com/What-is-the-technology-stack-behind-Uber

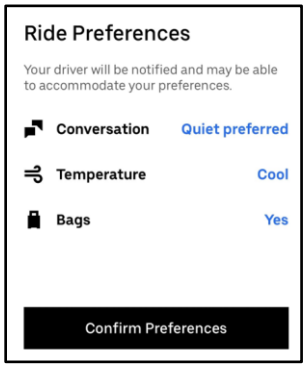
71. On information and belief, the Uber App transmits the vehicle control information to a vehicle device.

> "On-demand technology stack of Uber, Lyft, Ola sends notifications to the driver and customers through Push Notification Services, SMS, and Email… There are two apps that operate together, One app is for driver and another app is for the passenger… The instantaneous location of the driver is shared with the passenger in real-time so a driver needs to be online all the time."

https://www.appsrhino.com/lyft-tech-stack-uber/



Uber Passenger Application Screenshot February 12, 2020



Uber Passenger Application Screenshot February 12, 2020

72. On information and belief, the Uber App receives the vehicle control information at the vehicle device.

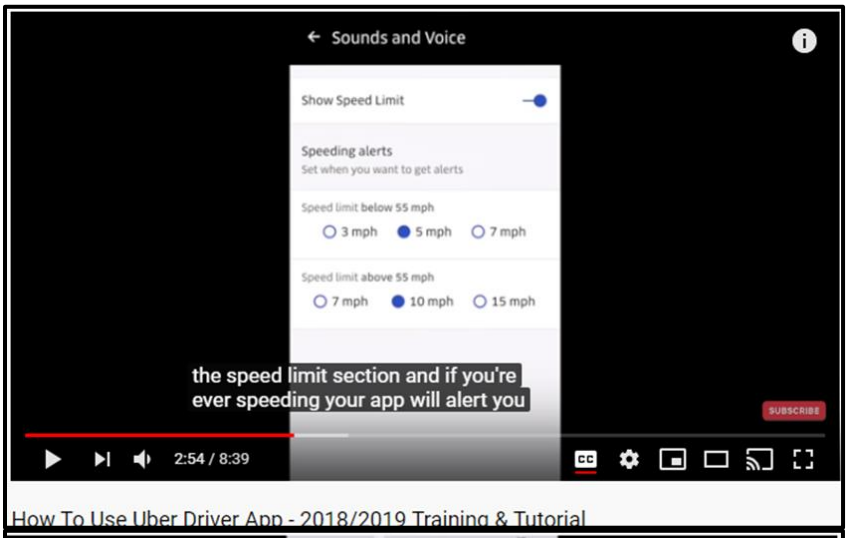
> "On-demand technology stack of Uber, Lyft, Ola sends notifications to the driver and customers through Push Notification Services, SMS, and Email… There are two apps that operate together, One app is for driver and another app is for the passenger… The instantaneous location of the driver is shared with the passenger in real-time so a driver needs to be online all the time."

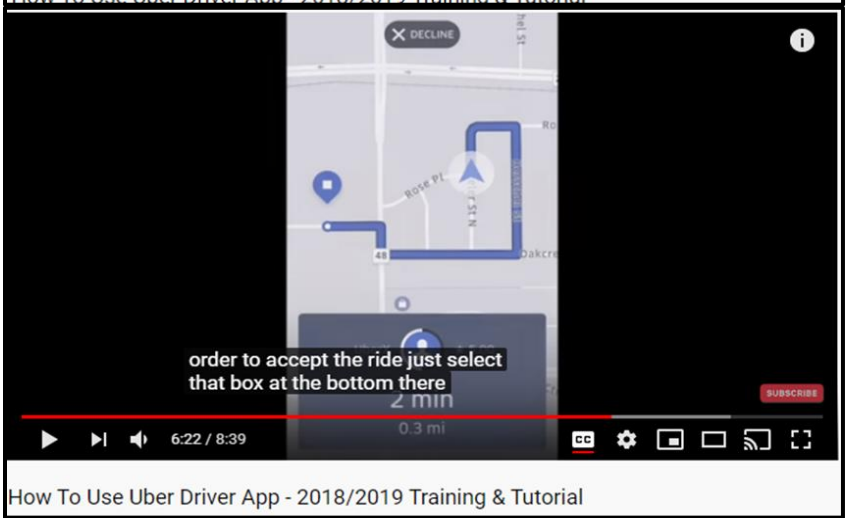
https://www.appsrhino.com/lyft-tech-stack-uber/

73. On information and belief, the Uber App arranges at the vehicle device for an indication to be provided to the operator in accordance with the vehicle control information.

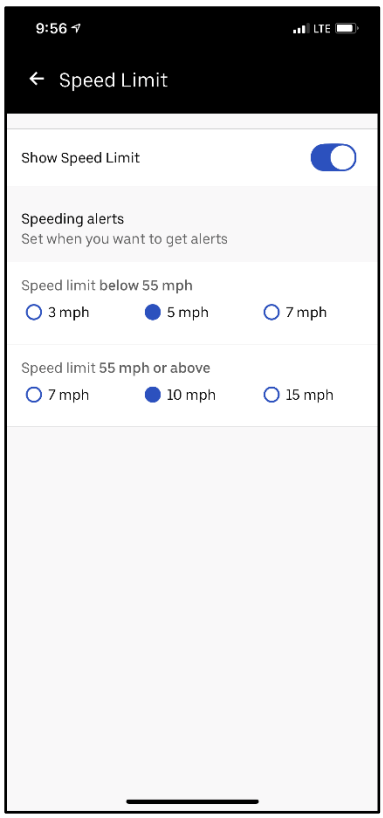
> "On-demand technology stack of Uber, Lyft, Ola sends notifications to the driver and customers through Push Notification Services, SMS, and Email…
>
> Send/accept the booking request
> Current location detection
> Direction tracking
> Ride/Fare calculations
> Chat and messaging
> Ride rating and review
> Cancel request – both ways"

https://www.appsrhino.com/lyft-tech-stack-uber/

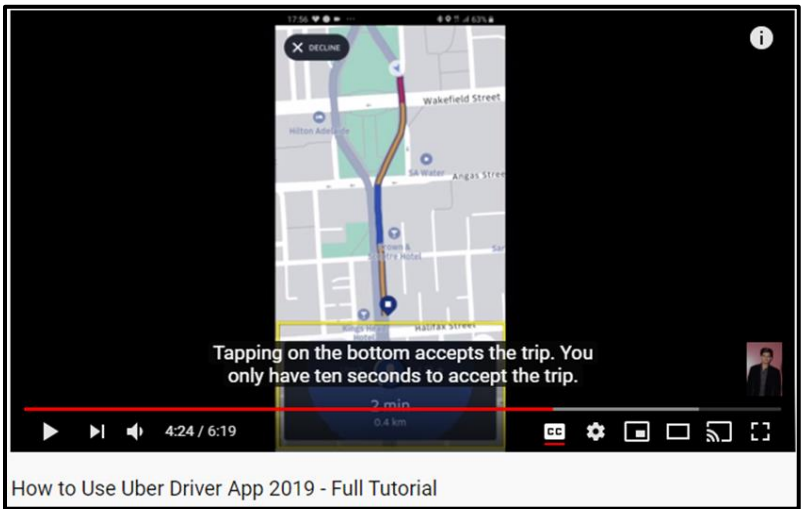




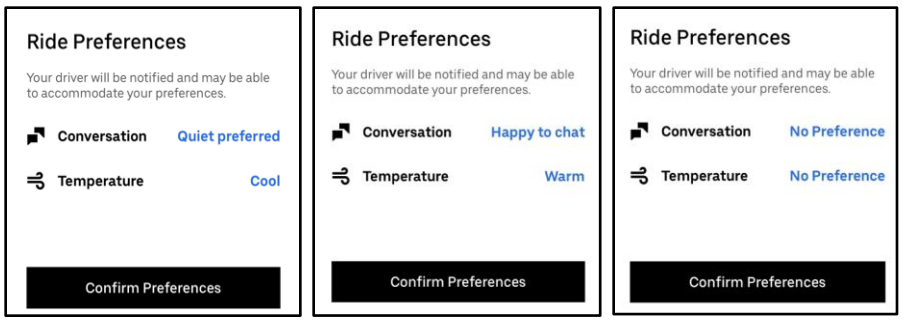
https://www.youtube.com/watch?v=fvg5-vZDjsU



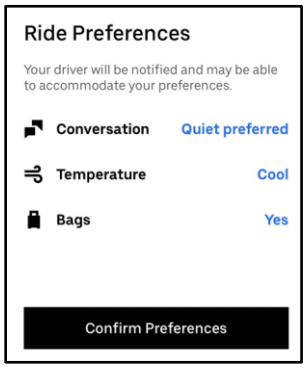
Uber Driver Application February 14, 2020



https://www.youtube.com/watch?v=5rtCduqp6wI



Uber Passenger Application Screenshot February 12, 2020



Uber Passenger Application Screenshot February 12, 2020

74. System claim 20 of the alleged claims:

20. A system, comprising:

a controller located at a location, wherein the controller is adapted to (i) determine vehicle control information associated with the location and with an operator of a vehicle and (ii) transmit the vehicle control information; and

a vehicle device adapted to (i) receive the vehicle control information and (ii) arrange for an indication to be provided to the operator in accordance with the vehicle control information.

75. On information and belief, the Uber application or Uber Network, which includes the passenger application, driver application, Uber server, and all related technology (hereinafter, "Uber App") is a system comprising a controller located at a location, wherein the controller is adapted to (i) determine vehicle control information associated with the location and with an operator of a vehicle and (ii) transmit the vehicle control information.

> "In cities where Uber is available, you can use the Uber app to request a ride. When a nearby driver accepts your request, the app displays an estimated time of arrival for the driver heading to your pickup location. The app will notify you when the driver is about to arrive.
>
> The Uber app also provides info about the driver with whom you will ride, including first name, vehicle type, and license plate number. This info helps the two of you connect at your pickup location.
>
> Use the app to enter your preferred destination anytime before or during the ride. If you have a preferred route, it's helpful to talk through the directions with the driver."

https://help.uber.com/riders/article/how-does-uber-work?nodeId=738d1ff7-5fe0-4383-b34c-4a2480efd71e

76. On information and belief, the Uber App is a system comprising a vehicle device adapted to (i) receive the vehicle control information and (ii) arrange for an indication to be provided to the operator in accordance with the vehicle control information.

> "On-demand technology stack of Uber, Lyft, Ola sends notifications to the driver and customers through Push Notification Services, SMS, and Email… There are two apps that operate together, One app is for driver and another app is for the passenger… The instantaneous location of the driver is shared with the passenger in real-time so a driver needs to be online all the time.""

https://www.appsrhino.com/lyft-tech-stack-uber/

77. On information and belief, Defendant's actions have and continue to constitute active inducing infringement of at least claims 1-19 and 20-22 of the '464 patent in violation of 35 U.S.C. §271(b).

78. As a result of Defendant's infringement of at least claims 1-19 and 20-22 of the '464 patent, Plaintiff Quartz Auto has suffered monetary damages in an amount yet to be determined, and will continue to suffer damages in the future unless Defendant's infringing activities are enjoined by this Court. Defendant is liable to Plaintiff in an amount that adequately

compensates for such infringements, which, by law, cannot be less than a reasonable royalty, together with interest and costs as fixed by this Court under 35 U.S.C. § 284.

79. Defendant's wrongful acts have damaged and will continue to damage Plaintiff Quartz Auto irreparably, and Plaintiff has no adequate remedy at law for those wrongs and injuries. In addition to its actual damages, Plaintiff Quartz Auto is entitled to a permanent injunction restraining and enjoining Defendant and its agents, servants, and employees, and all person acting thereunder, in concert with, or on its behalf, from infringing at least claims 1-19 and 20-22 of the '464 patent.

COUNT III
PATENT INFRINGEMENT OF THE '085 PATENT

80. Plaintiff Quartz Auto repeats and realleges the above paragraphs, which are incorporated by reference as if fully restated herein.

81. Plaintiff Quartz Auto is the owner of all rights, title, and interest in the '085 patent.

82. Plaintiff Quartz Auto and its predecessors in interest have never licensed to the Defendant under the '085 patent, nor has Plaintiff Quartz Auto otherwise authorized the Defendant to practice any part of the '085 patent.

83. The '085 patent is presumed valid under 35 U.S.C. § 282.

84. The '085 patent relates to, among other things, a method, system, and program for providing user location information with a personal information management program. A personal information management program gathers and presents personal information manager information, such as calendaring and scheduling information, allowing users to organize random bits of information in a useful format, including a person's geographic location.

85. On information and belief, Defendant operates a ride-hailing service that uses a passenger and driver application that interacts with a personal information management program,

using geographical reference data to depict the various drivers in the vicinity of a potential passenger.

86. **Direct Infringement:** On information and belief, Defendant has directly infringed and continues to directly infringe, either literally or under the doctrine of equivalents, one or more claims of the '085 patent, including for example (but not limited to) at least claims 1-19 and claims 20-22 of the '085 patent by making, using, distributing, providing, supplying, selling, offering to sell, or importing without license or authority, Defendant's application that include infringing features. The infringing products include applications that can be used on a variety of remote computing devices and gather and transmit location-specific information. Within Uber, the passenger application generates position coordinates corresponding to the time the Uber App is opened, connecting with the eight closest drivers (a list that continually updates until the passenger selects a destination). This is without Plaintiff Quartz Auto's authorization, in violation of 35 U.S.C. §271(a). A detailed infringement claim mapping is provided in paragraphs 91-95 and paragraphs 96-102 below.

87. **Induced Infringement:** On information and belief, Defendant has and continues to promote, advertise, and instruct drivers and riders, and potential drivers and riders about Uber products, such as:

(i) Defendant's Drive or Ride downloadable applications for Android and Apple systems ((Android: https://play.google.com/store/apps/details?id=com.ubercab&hl=en_US) and (Apple: (https://apps.apple.com/us/app/uber/id368677368)),

(ii) an overview of how to use Uber's branded products (https://www.uber.com/us/en/ride/), including instructions for riders to use the services (https://www.uber.com/us/en/ride/how-it-works/), and

(iii) requirements for drivers to sign-up (https://www.uber.com/us/en/drive/requirements/). Defendant's promotion, advertising, and instruction efforts include, at a minimum, maintenance of its own website http://www.uber.com, the production and distribution of instruction manuals, Frequently Asked Questions (FAQs) and how-to videos on the website, and other indicia of Uber branded products. (https://www.uber.com/us/en/ride/ and https://www.uber.com/us/en/drive/).

Defendant's software applications require both the rider and the driver to download the software applications for mobile computing devices, such as smartphones, laptops, and tablets, which enables Uber to completely control the actions of both the riders and the drivers to use the infringing features of the products and methods for ride-hailing. On information and belief, Defendant continues to engage in these acts with knowledge of the '085 patent by the filing of this Complaint, and with the actual intent to cause the acts which it knew or should have known would induce actual infringement.

88. Defendant Uber has infringed the '085 patent by making, having made, using, importing, providing, supplying, distributing, selling, or offering for sale systems utilizing a method for providing location information.

89. The '085 patent is well known in the industry – having been cited in at least 37 cited patents since its filing date.

90. **Detailed Mapping of Direct Infringement:** On information and belief, infringement of the '085 patent by these Uber ride-hailing products and applications is demonstrated below.

91. Claim 1 of the alleged claims:

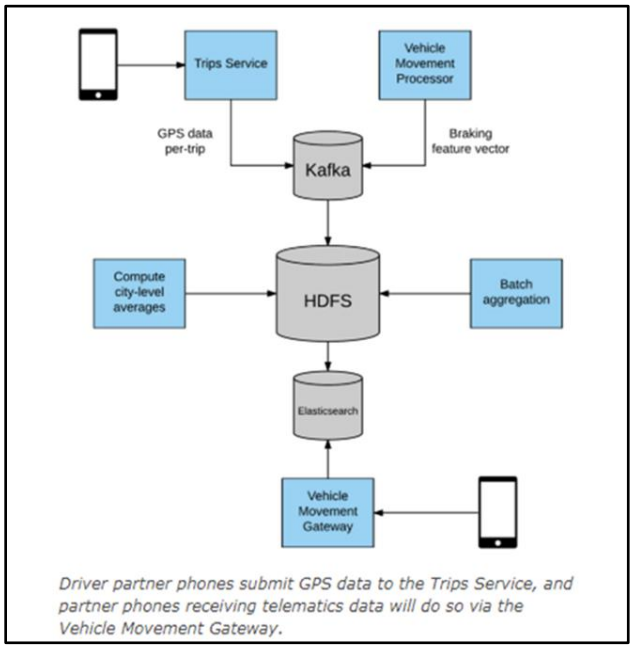
> 1. A method for providing user location information for a personal information management program, comprising:

generating position coordinates of a wireless device and time information indicating times when the position coordinates were generated, wherein a user is associated with the wireless device;

processing the position coordinates and time information to determine whether a rate of change in distance per unit of time in a series of position coordinates at times indicates a predefined activity of the user occurring during an activity time period during which the position coordinates and the time information were generated; and

generating information on the determined predefined activity for the activity time period.

92. On information and belief, the Uber application or Uber Network, which includes the passenger application, driver application, Uber server, and all related technology (hereinafter, "Uber App") performs a method for providing user location information for a personal information management program.



https://eng.uber.com/telematics/

> "Uber sends drivers comparative reports on their driving habits by analyzing the trip data for rapid acceleration, harsh braking, speeding, or dangerous cornering, but also stores data to find long-term driver- or location-specific trends."

https://www.geotab.com/blog/uber-driver-tracking/

> "[T]o understand speed, we have to understand how GPS works. Put simply, GPS is a system of 24 active satellites that orbit the Earth. The GPS receiver derives its position by determining its distance from at least four satellites."
>
> "Uber's service is built around their smartphone app used by both drivers and customers, which gives them an opportunity to collect GPS, gyroscope and accelerometer data during Uber trips. Data is constantly collected during trips and sent to Uber's servers for processing and long-term storage."

https://eng.uber.com/telematics/
https://www.geotab.com/blog/uber-driver-tracking/

93. On information and belief, the Uber App generates position coordinates of a wireless device and time information indicating times when the position coordinates were generated, wherein a user is associated with the wireless device.

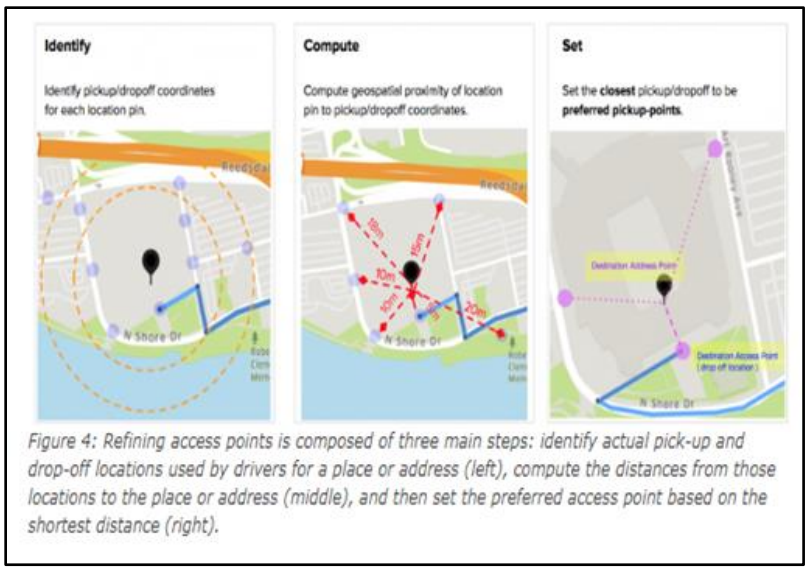
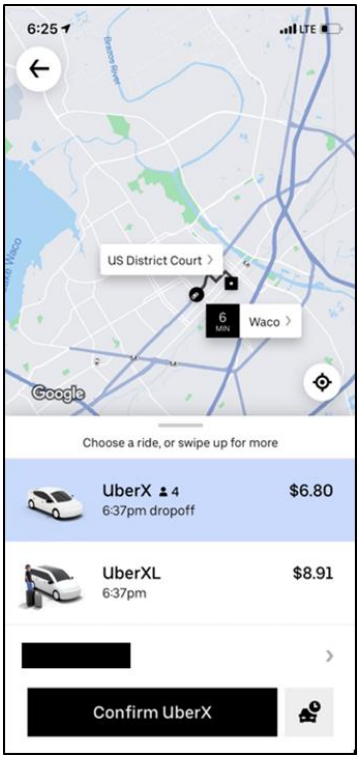


Figure 4: Refining access points is composed of three main steps: identify actual pick-up and drop-off locations used by drivers for a place or address (left), compute the distances from those locations to the place or address (middle), and then set the preferred access point based on the shortest distance (right).

https://eng.uber.com/maps-metrics-computation/



Uber Passenger Application Screenshot February 11, 2020

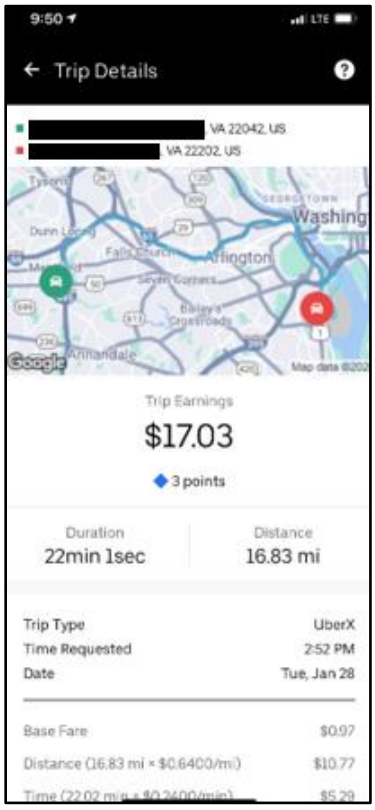
"When you request a ride, your driver will see where you've place your pickup location pin. For improved pickups, you can enable sharing your physical GPS location. This helps drivers know if you are coming towards them, or where to look for you if your pin is not in your exact location."

https://help.uber.com/riders/article/sharing-your-pickup-location?nodeId=c9b17922-551f-4ba3-9abe-26b582ef927a

GPS Data

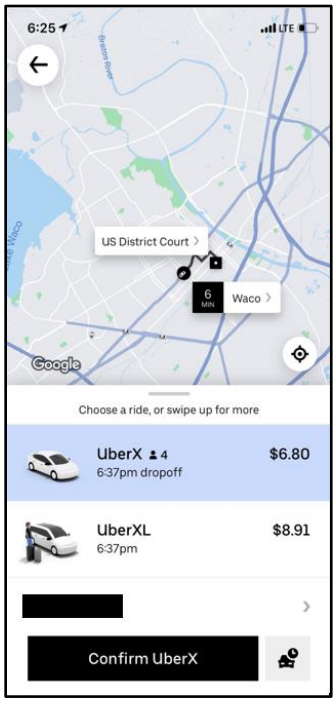
The Uber Driver-partner app records a location entry every 1 or 2 seconds that include latitude, longitude, speed, course, and a timestamp (date / time) of the GPS location ping. These GPS location pings are ingested in real-time (every 4 seconds) to power multiple Uber business products (e.g. turn-by-turn navigation for driver-partners, fare calculation, matching driver-partners with riders, as well as user experience elements, such as displaying the position of the car in the Uber Rider app). The GPS location data is also stored for offline processing, and when aggregated, can be used to derive average, median, and percentile speed data on any given street segment where there is sufficient data. Please note that the number and quality of GPS location data impacts the quality of speed data that we are able to derive on a given street segment.

https://d3i4yxtzktqr9n.cloudfront.net/webmovement/56b3b1999eb80fadffbeb9bebe9888a7.pdf

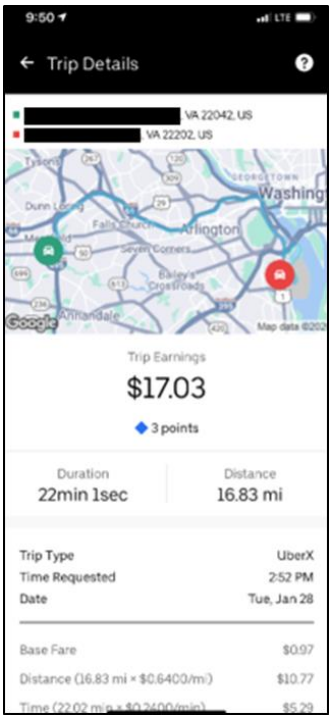


Uber Driver Application Screenshot February 14, 2020

94. On information and belief, the Uber App processes the position coordinates and time information to determine whether a rate of change in distance per unit of time in a series of position coordinates at times indicates a predefined activity of the user occurring during an activity time period during which the position coordinates and the time information were generated.



Uber Passenger Application Screenshot February 11, 2020



Uber Driver Application Screenshot February 14, 2020

"We process and store GPS data from trips in our Trips Service. Trip data is then published to a Kafka topic and consumed by many other internal services, one of which is our Vehicle Movement Processor. This service produces a feature vector of driving behavior (num_hard_brakes, peak_accel_magnitude, etc) to yet another Kafka topic to be consumed by more services. All data from Kafka eventually lands into HDFS for long-term storage. We can run batch analysis from our HDFS cluster using tools like Hive and Spark. For example, we can compute daily city-level averages for hard brakes. Then, we index this data with our Elasticsearch cluster for low-latency reads and expose a simple API through the Vehicle Movement Gateway."

https://eng.uber.com/telematics/

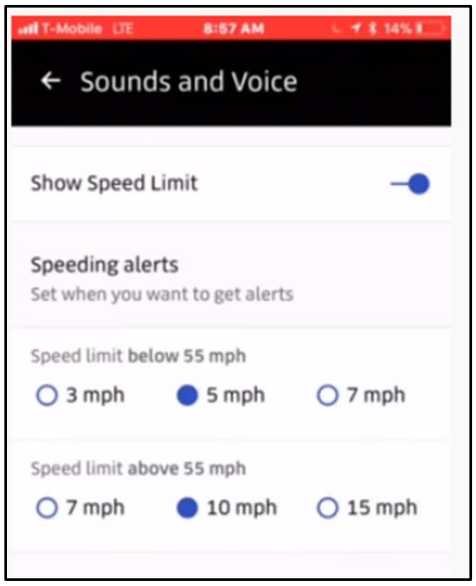
Input Data

In order to calculate speeds we use two data inputs: (a) GPS locations of vehicles over time, and (b) map data that represents the street network on which vehicles travel.

https://d3i4yxtzktqr9n.cloudfront.net/webmovement/56b3b1999eb80fadffbeb9bebe9888a7.pdf

> "GPS receivers on driver partner phones work in a similar way. The receiver (that is, the phone) is either moving toward or away from a satellite. The receiver's velocity can be accurately derived from the difference between the expected signal's frequency and its actual one. GPS can also take a measure of speed by looking at the rate at which the waves that carry the GPS signal change (this is called time-difference carrier positioning)."

https://eng.uber.com/telematics/



https://www.youtube.com/watch?v=83b8w7zjrAU

95. On information and belief, the Uber App generates information on the determined predefined activity for the activity time period.

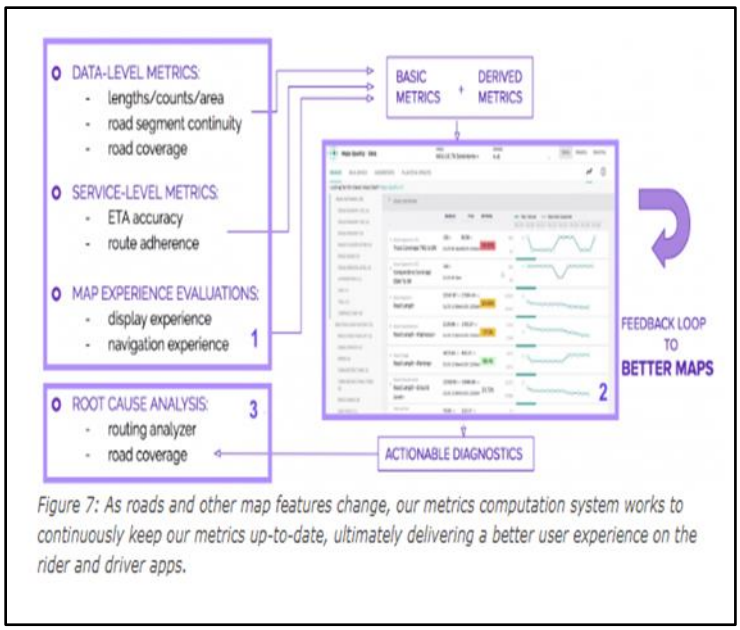


Figure 7: As roads and other map features change, our metrics computation system works to continuously keep our metrics up-to-date, ultimately delivering a better user experience on the rider and driver apps.

https://eng.uber.com/maps-metrics-computation/

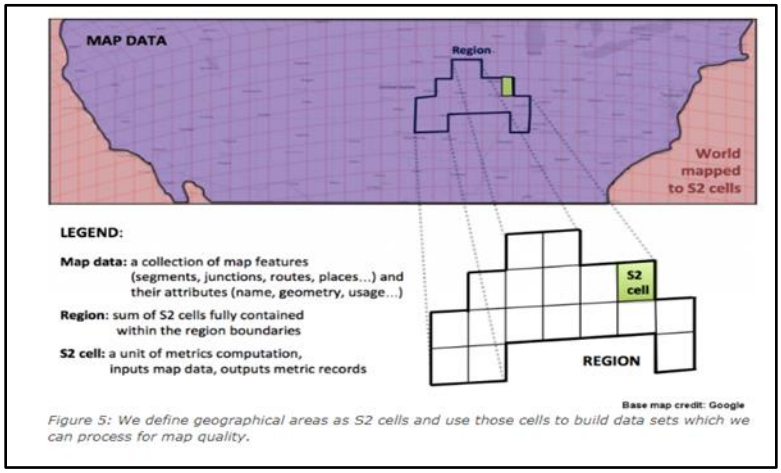


Figure 5: We define geographical areas as S2 cells and use those cells to build data sets which we can process for map quality.

https://eng.uber.com/maps-metrics-computation/

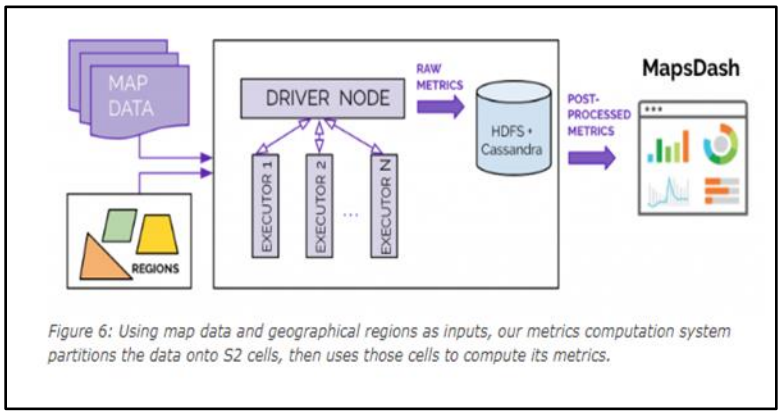
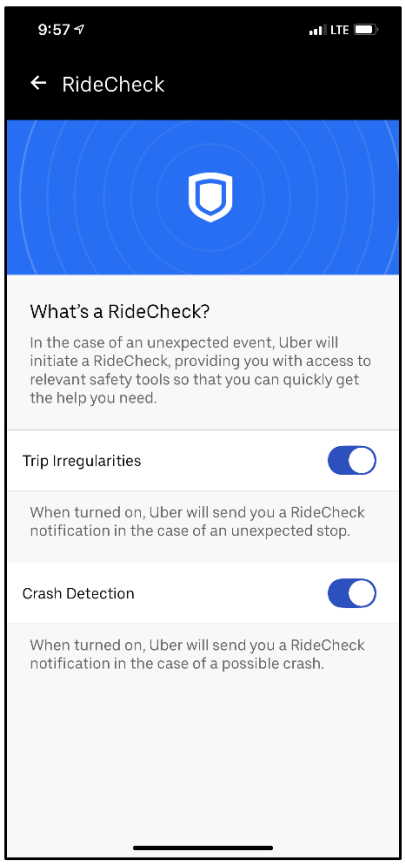
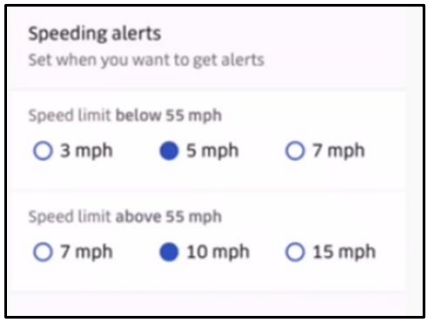


Figure 6: Using map data and geographical regions as inputs, our metrics computation system partitions the data onto S2 cells, then uses those cells to compute its metrics.

https://eng.uber.com/maps-metrics-computation/



Uber Driver Application Screenshot February 14, 2020



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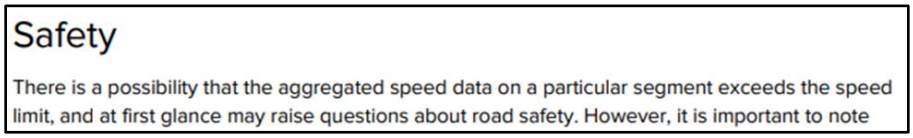

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96. Claim 20 of the alleged claims:

20. A method for generating a calendar for a personal information management, program, comprising:

receiving selection of a time interval;

for the selected time interval, determining position coordinates of a wireless device and time information indicating times when the position coordinates were generated, wherein a user is associated with the wireless device;

processing the position coordinates and time information during the selected time interval to determine whether a rate of change in distance per unit of time in a series of the position coordinates at times during the selected time interval indicates a predefined activity of the user occurring during the selected time interval;

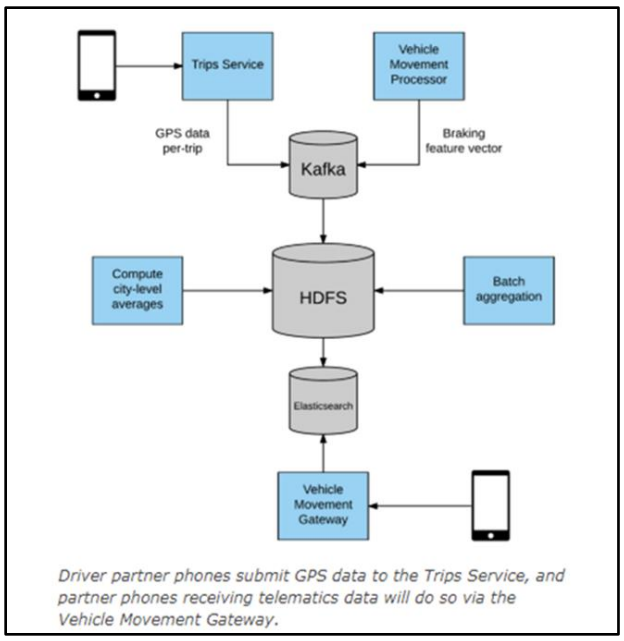
generating information on the predefined activity within the selected time interval; and

displaying information on the predefined activity of the user and the selected time interval.

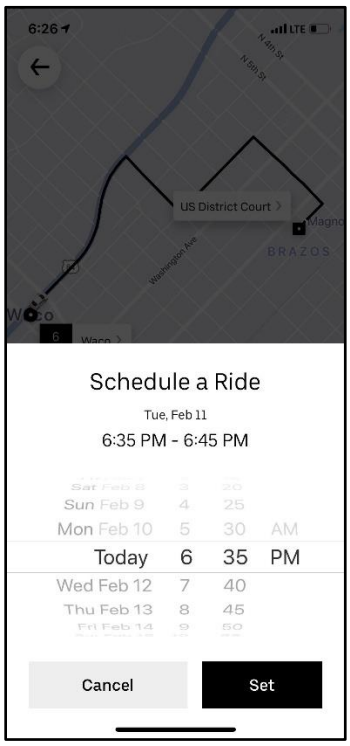
97. On information and belief, the Uber application or Uber Network, which includes the passenger application, driver application, Uber server, and all related technology (hereinafter, "Uber App") performs a method for generating a calendar for a personal information management program.

> "[T]o understand speed, we have to understand how GPS works. Put simply, GPS is a system of 24 active satellites that orbit the Earth. The GPS receiver derives its position by determining its distance from at least four satellites."
>
> "Uber's service is built around their smartphone app used by both drivers and customers, which gives them an opportunity to collect GPS, gyroscope and accelerometer data during Uber trips. Data is constantly collected during trips and sent to Uber's servers for processing and long-term storage."

https://eng.uber.com/telematics/
https://www.geotab.com/blog/uber-driver-tracking/



https://eng.uber.com/telematics/



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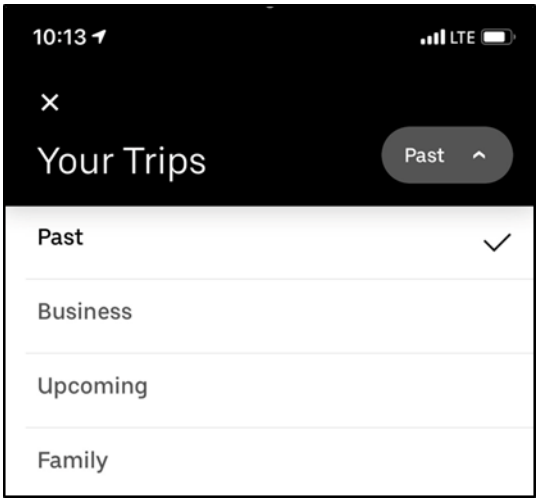
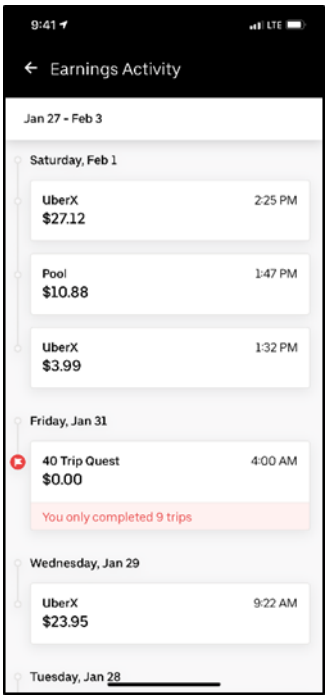


Uber Passenger Application Screenshot February 12, 2020



Uber Driver Application Screenshot February 14, 2020

> **GPS Data**
>
> The Uber Driver-partner app records a location entry every 1 or 2 seconds that include latitude, longitude, speed, course, and a timestamp (date / time) of the GPS location ping. These GPS location pings are ingested in real-time (every 4 seconds) to power multiple Uber business products (e.g. turn-by-turn navigation for driver-partners, fare calculation, matching driver-partners with riders, as well as user experience elements, such as displaying the position of the car in the Uber Rider app). The GPS location data is also stored for offline processing, and when aggregated, can be used to derive average, median, and percentile speed data on any given street segment where there is sufficient data. Please note that the number and quality of GPS location data impacts the quality of speed data that we are able to derive on a given street segment.

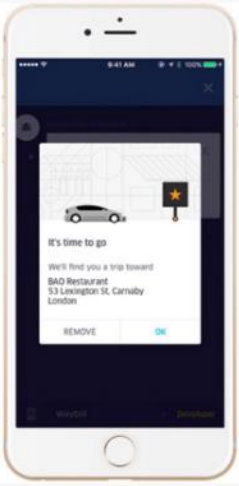
https://d3i4yxtzktqr9n.cloudfront.net/webmovement/56b3b1999eb80fadffbeb9bebe9888a7.pdf

98. On information and belief, the Uber App receives selection of a time interval.

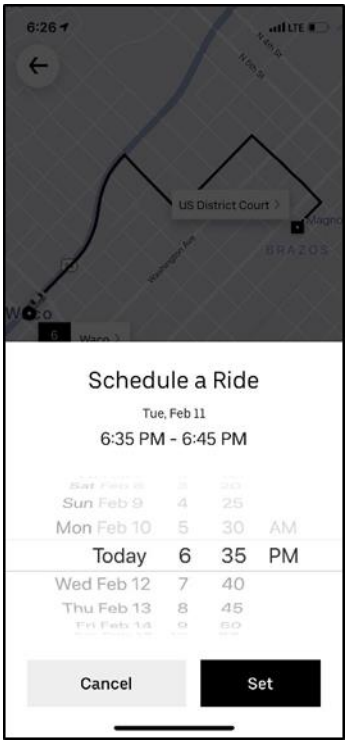
> "Before a trip starts, your app provides an ETA for when your driver should arrive at your pickup location.
> After your trip starts, your app provides an ETA for when you should arrive at your destination.
> Please note that ETA times are estimates and not guaranteed. A variety of external factors like heavy traffic or road construction can impact travel time.
> Before you request a ride, your app displays a time in the black SET PICKUP LOCATION bar. This time estimates how long nearby drivers should take to arrive at your pickup location.
> Using the slider at the bottom of your screen, you can view the ETA for each vehicle option available in your city.
> After a trip starts, your app will continually update the ETA for your destination."

https://help.uber.com/riders/article/how-do-etas-work?nodeId=6a4dbe13-0a86-4d11-a0ab-cc88f8171fb8

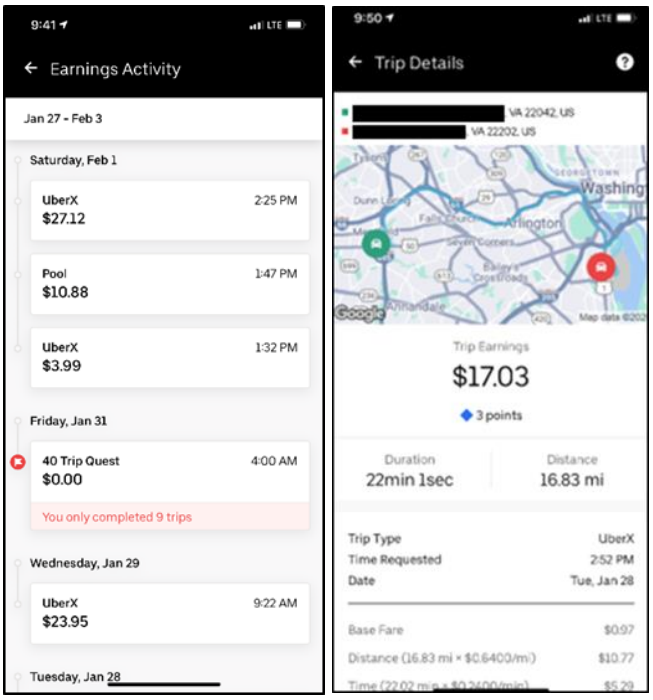
> "We've added arrival time as an option when you set your destination. Using this new feature, you can set your destination at the beginning of your day and then drive worry-free, knowing we'll help you be at your destination on time."



https://www.uber.com/en-GB/drive/resources/driver-destination-arrival-time/



Uber Passenger Application Screenshot February 11, 2020



Uber Driver Application Screenshot February 14, 2020

99. On information and belief, the Uber App determines position coordinates of a wireless device and time information indicating times when the position coordinates were generated, wherein a user is associated with the wireless device, for the selected time interval.

> "Before a trip starts, your app provides an ETA for when your driver should arrive at your pickup location.
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> Please note that ETA times are estimates and not guaranteed. A variety of external factors like heavy traffic or road construction can impact travel time.
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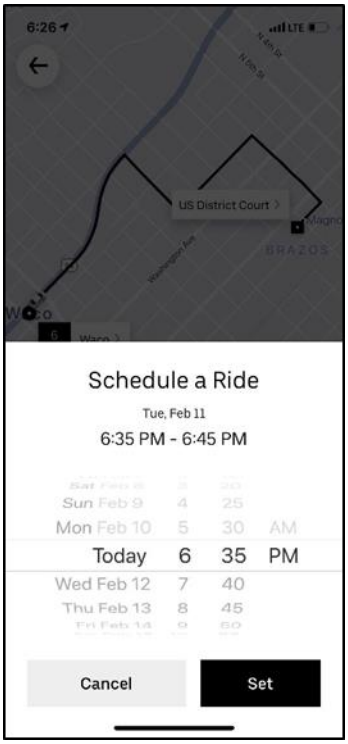

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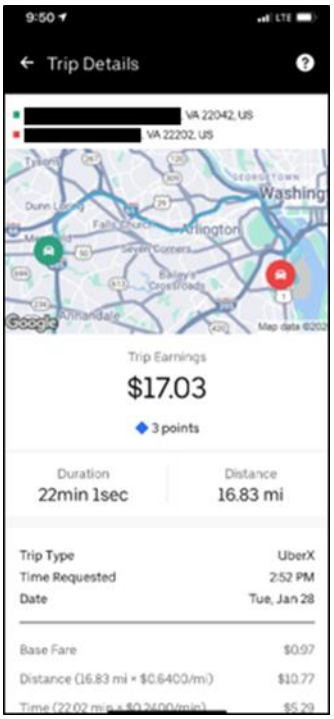

Uber Driver Application Screenshot February 14, 2020

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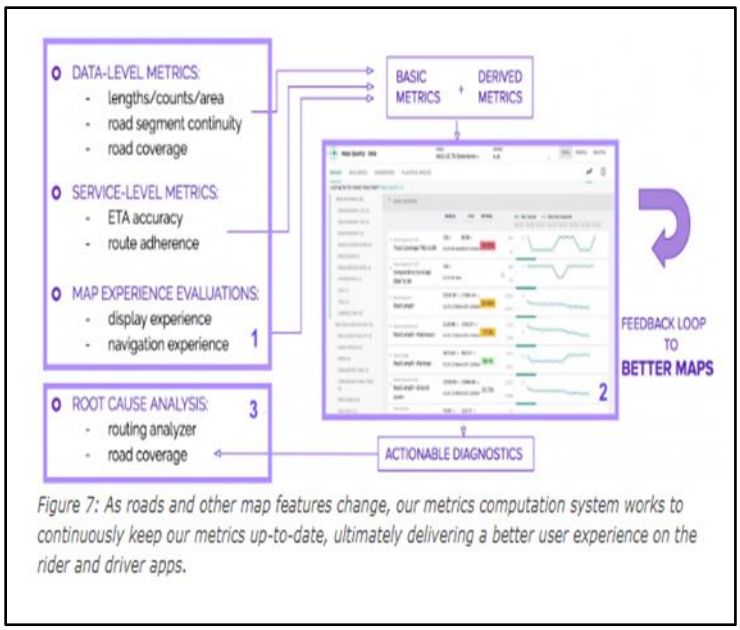

Figure 7: As roads and other map features change, our metrics computation system works to continuously keep our metrics up-to-date, ultimately delivering a better user experience on the rider and driver apps.

https://eng.uber.com/maps-metrics-computation/

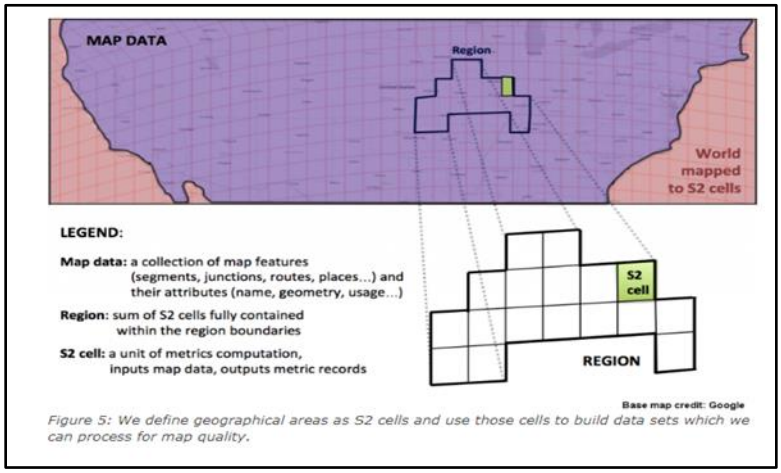

Figure 5: We define geographical areas as S2 cells and use those cells to build data sets which we can process for map quality.

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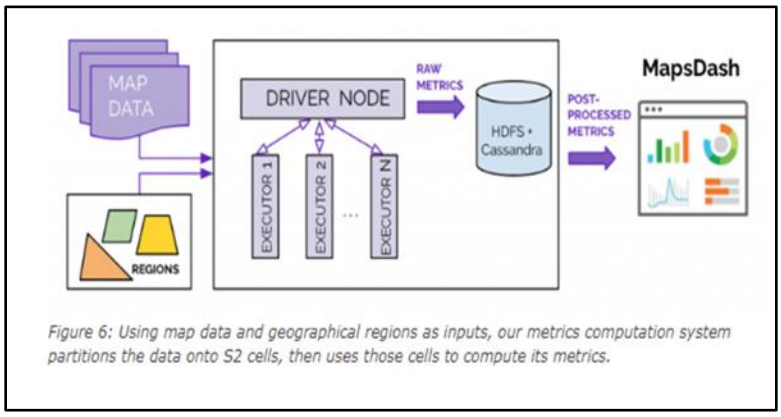
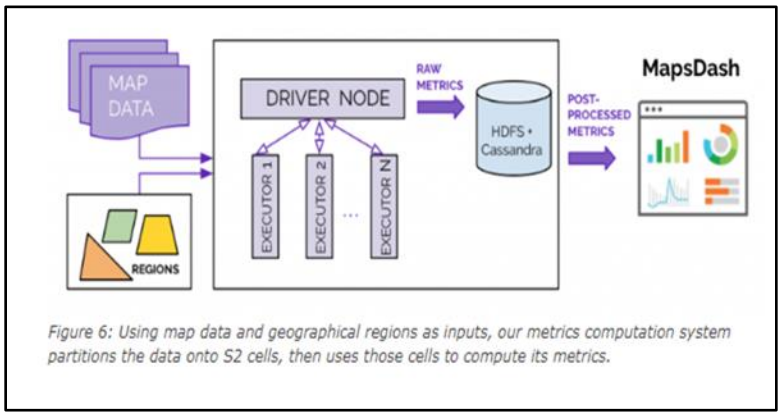


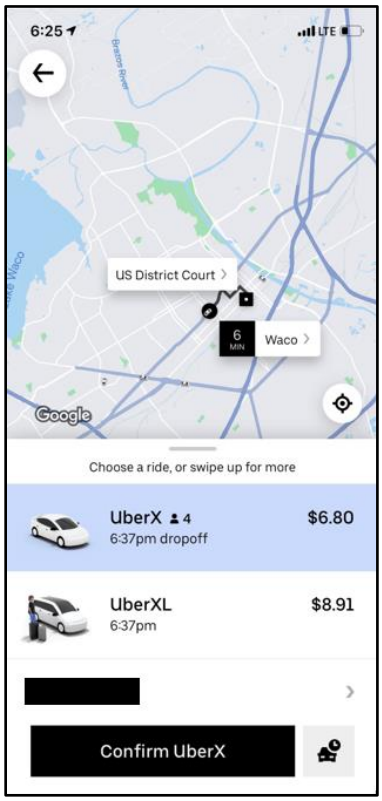
Figure 6: Using map data and geographical regions as inputs, our metrics computation system partitions the data onto S2 cells, then uses those cells to compute its metrics.

https://eng.uber.com/maps-metrics-computation/

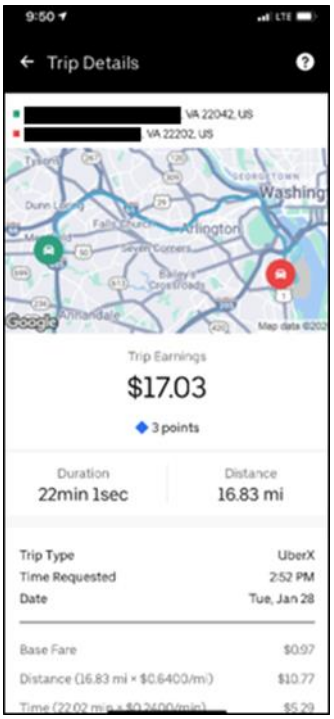
102. On information and belief, the Uber App displays information on the predefined activity of the user and the selected time interval.



https://eng.uber.com/maps-metrics-computation/



Uber Passenger Application Screenshot February 11, 2020



Uber Driver Application Screenshot February 14, 2020

103. On information and belief, Defendant's actions have and continue to constitute active inducing infringement of at least claims 1-19 and 20-23 of the '085 patent in violation of 35 U.S.C. §271(b).

104. As a result of Defendant's infringement of at least claims 1-19 and 20-23 of the '085 patent, Plaintiff Quartz Auto has suffered monetary damages in an amount yet to be determined, and will continue to suffer damages in the future unless Defendant's infringing activities are enjoined by this Court. Defendant is liable to Plaintiff in an amount that adequately compensates for such infringements, which, by law, cannot be less than a reasonable royalty, together with interest and costs as fixed by this Court under 35 U.S.C. § 284.

105. Defendant's wrongful acts have damaged and will continue to damage Plaintiff Quartz Auto irreparably, and Plaintiff has no adequate remedy at law for those wrongs and injuries. In addition to its actual damages, Plaintiff Quartz Auto is entitled to a permanent injunction restraining and enjoining Defendant and its agents, servants, and employees, and all person acting

thereunder, in concert with, or on its behalf, from infringing at least claims 1-19 and 20-23 of the '085 patent.

COUNT IV
PATENT INFRINGEMENT OF THE '215 PATENT

106. Plaintiff Quartz Auto repeats and realleges the above paragraphs, which are incorporated by reference as if fully restated herein.

107. Plaintiff Quartz Auto is the owner of all rights, title, and interest in the '215 patent.

108. Plaintiff Quartz Auto and its predecessors in interest have never licensed to Defendant under the '215 patent, nor has Plaintiff Quartz Auto otherwise authorized the Defendant to practice any part of the '215 patent.

109. The '215 patent is presumed valid under 35 U.S.C. § 282.

110. The '215 patent relates to, among other things, system management using real time collaboration.

111. On information and belief, Defendant operates a ride-hailing service that uses a passenger application, driver application, and server that collaborate in real time.

112. **Direct Infringement:** On information and belief, Defendant has directly infringed and continues to directly infringe, either literally or under the doctrine of equivalents, one or more claims of the '215 patent, including for example (but not limited to) at least computer implemented method claims 1-4, computer implemented method claims 5-13, computer implemented method claims 14-16, and computer implemented method claim 17 of the '215 patent by making, using, distributing, providing, supplying, selling, offering to sell, or importing without license or authority, Defendant's application that include infringing features. The infringing products includes applications that respond to alerts made by the passenger (e.g. requesting an Uber) by automatically detecting available nearby drivers and assigning responsibility of passenger's alert

to a driver (e.g. accepting the passenger's request for an Uber). This is without Plaintiff Quartz Auto's authorization, in violation of 35 U.S.C. §271(a). A detailed infringement claim mapping is provided in paragraphs 117-122, paragraphs 123-129, paragraphs 130-137, and paragraphs 138-144 below.

113. **Induced Infringement:** On information and belief, Defendant has and continues to promote, advertise, and instruct drivers and riders, and potential drivers and riders about Uber products, such as:

(i) Defendant's Drive or Ride downloadable applications for Android and Apple systems ((Android: https://play.google.com/store/apps/details?id=com.ubercab&hl=en_US) and (Apple: (https://apps.apple.com/us/app/uber/id368677368)),

(ii) an overview of how to use Uber's branded products (https://www.uber.com/us/en/ride/), including instructions for riders to use the services (https://www.uber.com/us/en/ride/how-it-works/), and

(iii) requirements for drivers to sign-up (https://www.uber.com/us/en/drive/requirements/). Defendant's promotion, advertising, and instruction efforts include, at a minimum, maintenance of its own website http://www.uber.com, the production and distribution of instruction manuals, Frequently Asked Questions (FAQs) and how-to videos on the website, and other indicia of Uber branded products. (https://www.uber.com/us/en/ride/ and https://www.uber.com/us/en/drive/).

Defendant's software applications require both the rider and the driver to download the software applications for mobile computing devices, such as smartphones, laptops, and tablets, which enables Uber to completely control the actions of both the riders and the drivers to use the infringing features of the products and methods for ride-hailing. On information and belief,

Defendant continues to engage in these acts with knowledge of the '215 patent by the filing of this Complaint, and with the actual intent to cause the acts which it knew or should have known would induce actual infringement.

114. Defendant Uber has infringed the '215 patent by making, having made, using, importing, providing, supplying, distributing, selling, or offering for sale systems utilizing a method and system for tracking mobile objects.

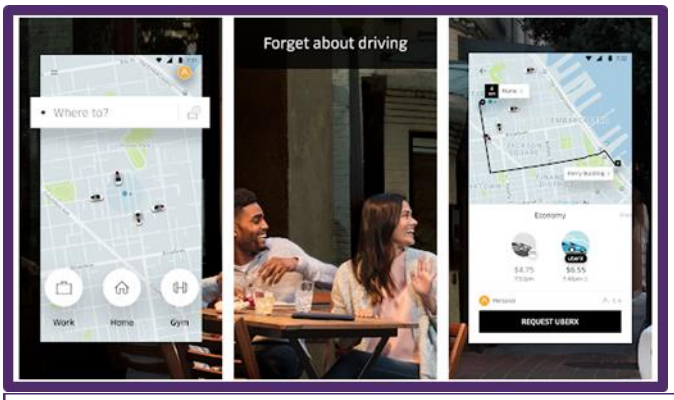
115. The '215 patent is well known in the industry – having been cited in at least 33 cited patents since its filing date

116. **Detailed Mapping of Direct Infringement:** On information and belief, infringement of the '215 patent by these Uber ride-hailing products and applications is demonstrated below.

117. Computer implemented method claim 1 is below:

> 1. A computer-implemented method of responding to a problem condition, comprising:
> automatically detecting availability of a first candidate to respond to a problem condition;
> responsive to the detecting:
> automatically assigning responsibility for the problem condition to the first candidate; and
> receiving a confirmation from the first candidate indicating acceptance of responsibility for the problem condition.

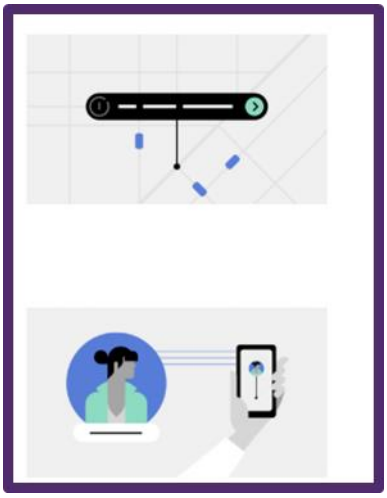
118. On information and belief, the Uber application or Uber Network, which includes the passenger application, driver application, Uber server, and all related technology (hereinafter, "Uber App") is a computer implemented method of responding to a problem condition.



"Requesting your Uber is easy—here's how it works:
- Just open the app and tell us where you're going.
- The app uses your location so your driver knows where to pick you up.
- You'll see your driver's picture, vehicle details, and can track their arrival on the map."

https://play.google.com/store/apps/details?id=com.ubercab&hl=en

119. On information and belief, the Uber App automatically detects availability of a first candidate to respond to a problem condition.



Step 1

A rider opens the app

The rider enters their destination into the "Where to?" box; reviews each ride option for vehicle size, price, and estimated dropoff time; chooses the desired option; then confirms the pickup.

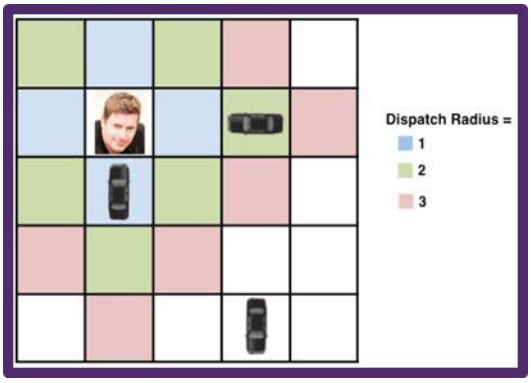
Step 2

The rider is matched with a driver

A nearby driver sees and chooses to accept the rider's ride request. The rider is automatically notified when the driver's vehicle is about a minute away.

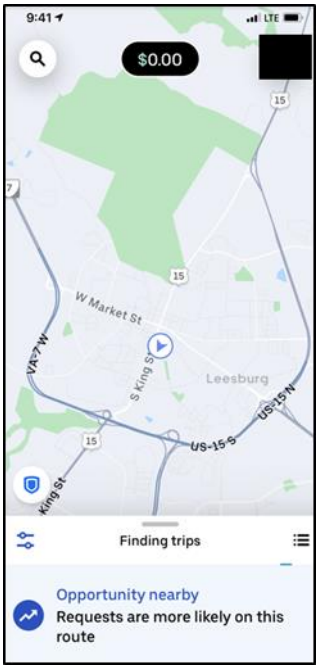
https://www.uber.com/us/en/about/how-does-uber-work/

https://developer.uber.com/docs/riders/ride-requests/tutorials/api/best-practices#indicating-ride-status-throughout-application



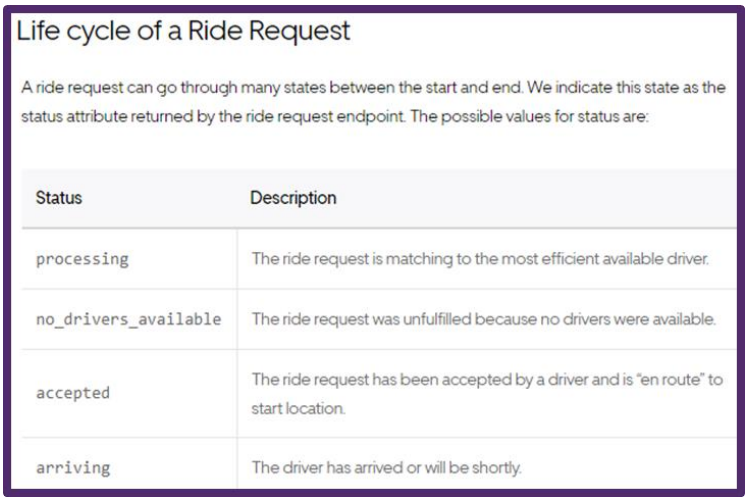
https://www.uber.com/newsroom/semi-automated-science-using-an-ai-simulation-framework

Uber Passenger Application Screenshot February 13, 2020 *(emphasis added in red)*



Uber Driver Application Screenshot February 14, 2020

120. On information and belief, the Uber App is responsive to the detecting.



Life cycle of a Ride Request

A ride request can go through many states between the start and end. We indicate this state as the status attribute returned by the ride request endpoint. The possible values for status are:

Status	Description
processing	The ride request is matching to the most efficient available driver.
no_drivers_available	The ride request was unfulfilled because no drivers were available.
accepted	The ride request has been accepted by a driver and is "en route" to start location.
arriving	The driver has arrived or will be shortly.

https://developer.uber.com/docs/riders/ride-requests/tutorials/api/best-practices

"Accepting trip and delivery requests
Once online, you'll automatically begin to receive requests in your area. Your phone will sound. Swipe to accept."

https://www.uber.com/us/en/drive/driver-app/

121. On information and belief, the Uber App automatically assigns responsibility for the problem condition to the first candidate.

Life cycle of a Ride Request

A ride request can go through many states between the start and end. We indicate this state as the status attribute returned by the ride request endpoint. The possible values for status are:

Status	Description
`processing`	The ride request is matching to the most efficient available driver.
`no_drivers_available`	The ride request was unfulfilled because no drivers were available.
`accepted`	The ride request has been accepted by a driver and is "en route" to start location.
`arriving`	The driver has arrived or will be shortly.

https://developer.uber.com/docs/riders/ride-requests/tutorials/api/best-practices

"Accepting trip and delivery requests
Once online, you'll automatically begin to receive requests in your area. Your phone will sound. Swipe to accept."

https://www.uber.com/us/en/drive/driver-app/

122. On information and belief, the Uber App receives a confirmation from the first candidate indicating acceptance of responsibility for the problem condition.

https://developer.uber.com/docs/riders/ride-requests/tutorials/api/best-practices#indicating-ride-status-throughout-application

"Accepting trip and delivery requests
Once online, you'll automatically begin to receive requests in your area. Your phone will sound. Swipe to accept."

https://www.uber.com/us/en/drive/driver-app/

123. Computer implanted method claim 5 is below:

5. A computer-implemented method of managing an information technology device, comprising:

receiving an alert from a managed information technology device;

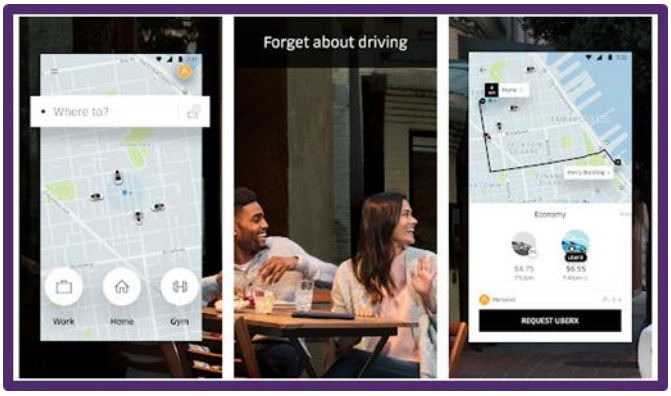
receiving availability information about a plurality of candidates;

automatically selecting a candidate qualified and available to respond to the event from among the plurality of candidates;

automatically assigning responsibility for the alert to the candidate; and

receiving a reply from the candidate indicating acceptance of responsibility for the alert.

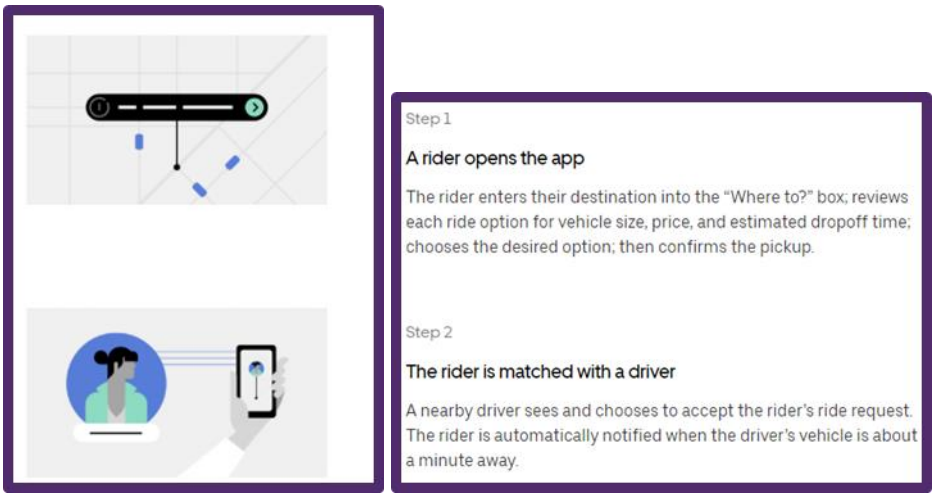
124. On information and belief, the Uber application or Uber Network, which includes the passenger application, driver application, Uber server, and all related technology (hereinafter, "Uber App") is a computer implemented method of managing an information technology device.



"Requesting your Uber is easy—here's how it works:
- Just open the app and tell us where you're going.
- The app uses your location so your driver knows where to pick you up.
- You'll see your driver's picture, vehicle details, and can track their arrival on the map."

https://play.google.com/store/apps/details?id=com.ubercab&hl=en

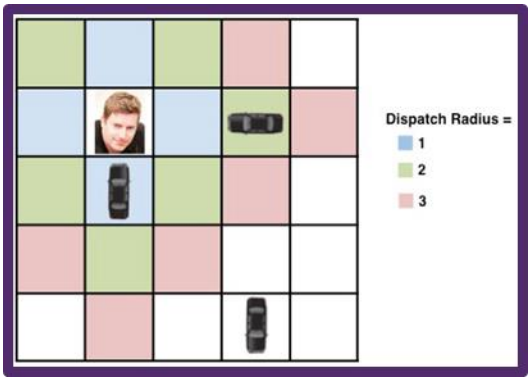
125. On information and belief, the Uber App receives an alert from a managed information technology device.



https://www.uber.com/us/en/about/how-does-uber-work/

https://developer.uber.com/docs/riders/ride-requests/tutorials/api/best-practices#indicating-ride-status-throughout-application

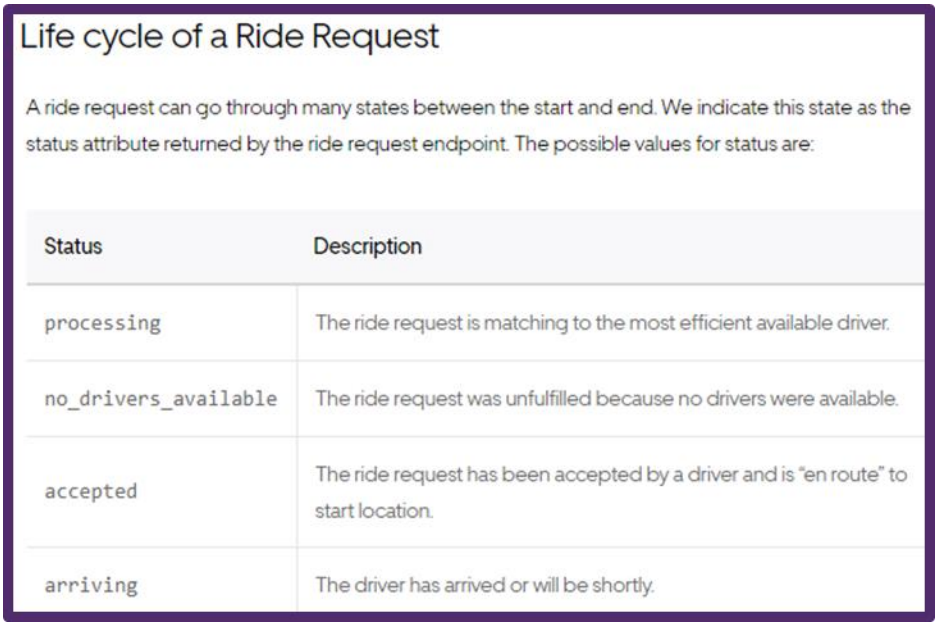
126. On information and belief, the Uber App receives availability information about a plurality of candidates.



https://www.uber.com/newsroom/semi-automated-science-using-an-ai-simulation-framework

Uber Passenger Application Screenshot February 13, 2020 *(emphasis added in red)*

127. On information and belief, the Uber App automatically selects a candidate qualified and available to respond to the event from among the plurality of candidates.

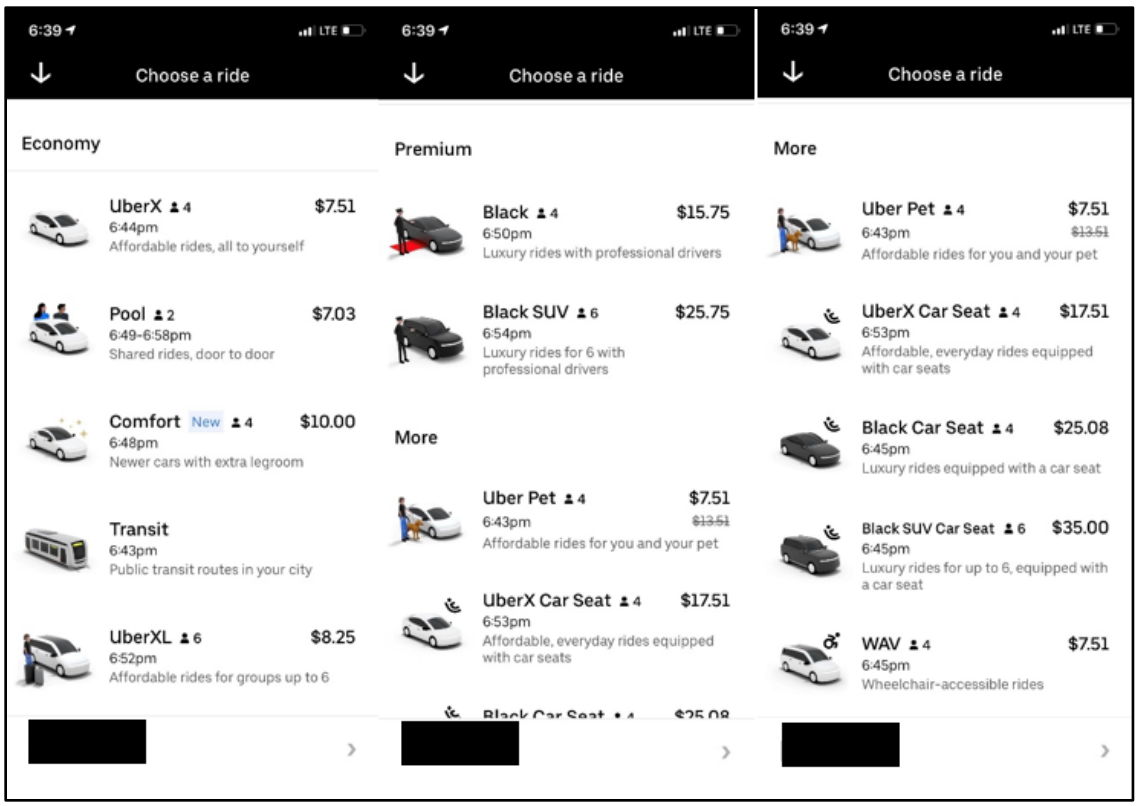


Life cycle of a Ride Request

A ride request can go through many states between the start and end. We indicate this state as the status attribute returned by the ride request endpoint. The possible values for status are:

Status	Description
`processing`	The ride request is matching to the most efficient available driver.
`no_drivers_available`	The ride request was unfulfilled because no drivers were available.
`accepted`	The ride request has been accepted by a driver and is "en route" to start location.
`arriving`	The driver has arrived or will be shortly.

https://developer.uber.com/docs/riders/ride-requests/tutorials/api/best-practices



Uber Passenger Application Screenshot February 11, 2020

128. On information and belief, the Uber App automatically assigns responsibility for the alert to the candidate.

> "Accepting trip and delivery requests
> Once online, you'll automatically begin to receive requests in your area. Your phone will sound. Swipe to accept."

https://www.uber.com/us/en/drive/driver-app/

129. On information and belief, the Uber App receives a reply from the candidate indicating acceptance of responsibility for the alert.

https://developer.uber.com/docs/riders/ride-requests/tutorials/api/best-practices#indicating-ride-status-throughout-application

"Accepting trip and delivery requests
Once online, you'll automatically begin to receive requests in your area. Your phone will sound. Swipe to accept."

https://www.uber.com/us/en/drive/driver-app/

130. Computer implanted method claim 14 is below:

14. A computer-implemented method of managing an information technology device, comprising:

receiving an alert from a managed information technology device;

automatically selecting a candidate qualified to respond to the event;

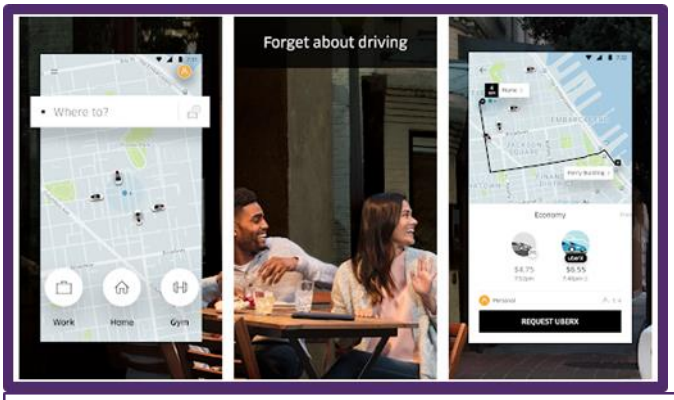
automatically determining if the candidate is available to respond to the event;

automatically sending an instant message to the candidate containing information about the alert;

receiving an instant message from the candidate indicating acceptance of responsibility for the alert; and

automatically assigning responsibility for the alert to the candidate.

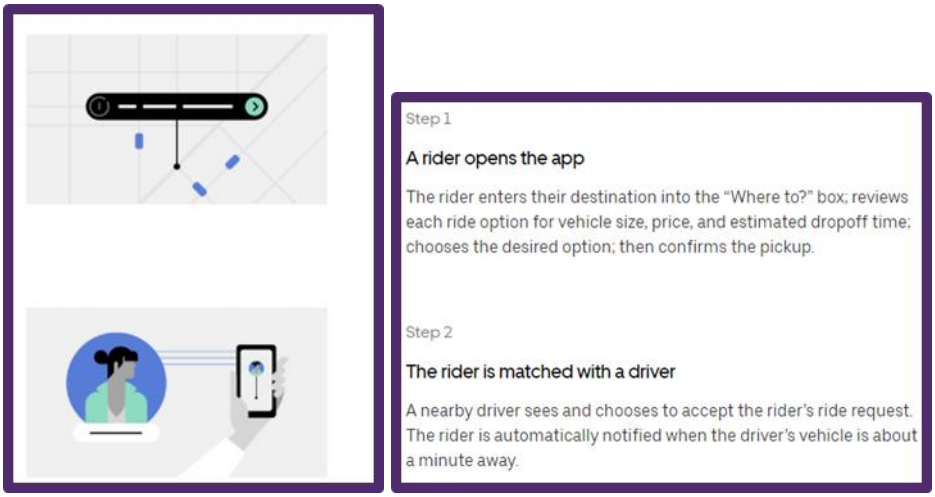
131. On information and belief, the Uber application or Uber Network, which includes the passenger application, driver application, Uber server, and all related technology (hereinafter, "Uber App") is a computer implemented method of responding to a problem condition.



"Requesting your Uber is easy—here's how it works:
- Just open the app and tell us where you're going.
- The app uses your location so your driver knows where to pick you up.
- You'll see your driver's picture, vehicle details, and can track their arrival on the map."

https://play.google.com/store/apps/details?id=com.ubercab&hl=en

132. On information and belief, the Uber App receives an alert from a managed information technology device.



https://www.uber.com/us/en/about/how-does-uber-work/

https://developer.uber.com/docs/riders/ride-requests/tutorials/api/best-practices#indicating-ride-status-throughout-application

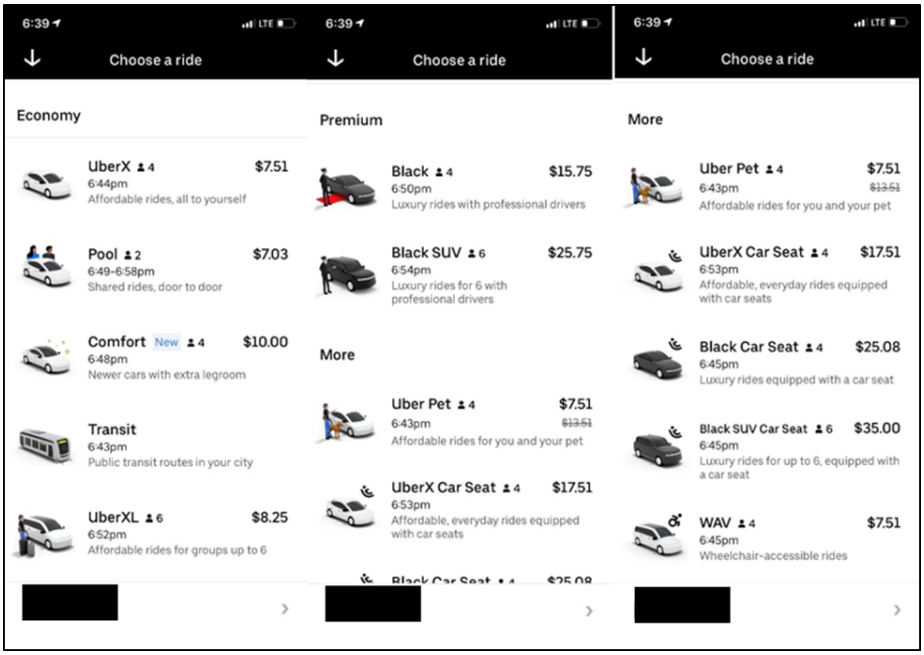
133. On information and belief, the Uber App automatically selects a candidate qualified to respond to the event.

Life cycle of a Ride Request

A ride request can go through many states between the start and end. We indicate this state as the status attribute returned by the ride request endpoint. The possible values for status are:

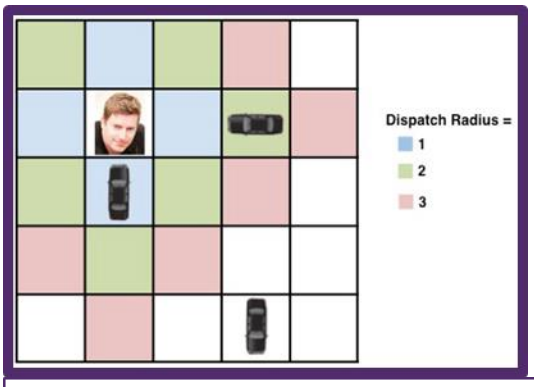
Status	Description
`processing`	The ride request is matching to the most efficient available driver.
`no_drivers_available`	The ride request was unfulfilled because no drivers were available.
`accepted`	The ride request has been accepted by a driver and is "en route" to start location.
`arriving`	The driver has arrived or will be shortly.

https://developer.uber.com/docs/riders/ride-requests/tutorials/api/best-practices



Uber Passenger Application Screenshot February 11, 2020

134. On information and belief, the Uber App automatically determines if the candidate is available to respond to the event

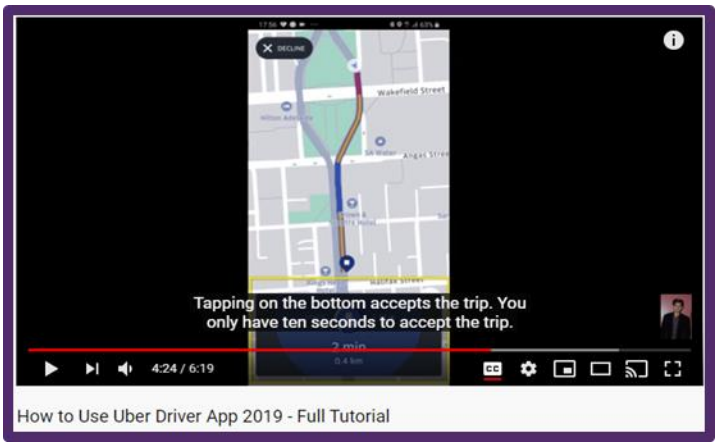


"We want to figure out how to optimize the dispatch radius, the farthest distance between a passenger and driver where we'll allow a request to go through…
… If the dispatch radius is limited to 1 unit, then only cars within the blue zone will see that request… As we increase the dispatch radius to 2 or 3 units, more cars are visible to accept the request."

https://www.uber.com/newsroom/semi-automated-science-using-an-ai-simulation-framework

Uber Passenger Application Screenshot February 13, 2020 *(emphasis added in red)*

135. On information and belief, the Uber App automatically sends an instant message to the candidate containing information about the alert.



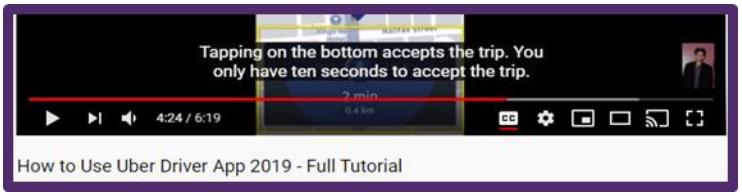
https://www.youtube.com/watch?v=5rtCduqp6wI

> "Accepting trip and delivery requests
> Once online, you'll automatically begin to receive requests in your area. Your phone will sound. Swipe to accept."

https://www.uber.com/us/en/drive/driver-app/

136. On information and belief, the Uber App receives an instant message from the candidate indicating acceptance of responsibility for the alert.

https://developer.uber.com/docs/riders/ride-requests/tutorials/api/best-practices#indicating-ride-status-throughout-application

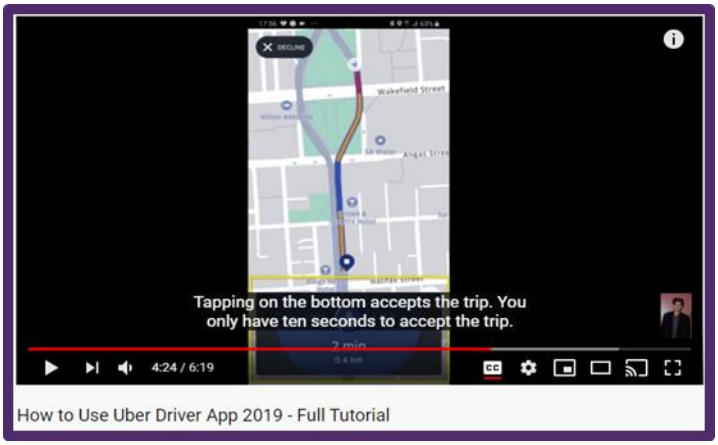


https://www.youtube.com/watch?v=5rtCduqp6wI

> "Accepting trip and delivery requests
> Once online, you'll automatically begin to receive requests in your area. Your phone will sound. Swipe to accept."

https://www.uber.com/us/en/drive/driver-app/

137. On information and belief, the Uber App automatically assigns responsibility for the alert to the candidate.



https://www.youtube.com/watch?v=5rtCduqp6wI

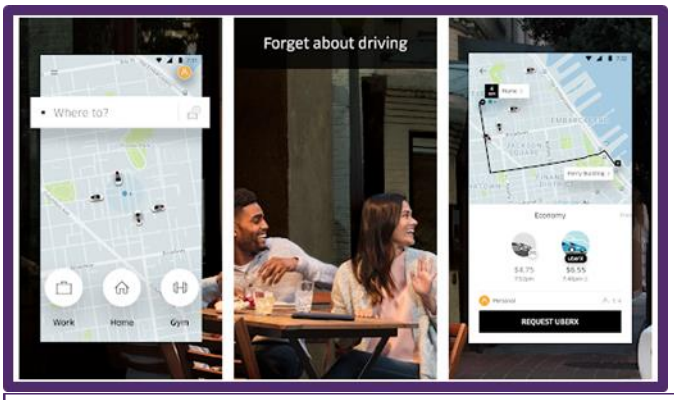
> "Accepting trip and delivery requests
> Once online, you'll automatically begin to receive requests in your area. Your phone will sound. Swipe to accept."

https://www.uber.com/us/en/drive/driver-app/

138. Computer implanted method claim 17 is below:

> 17. A computer-implemented method for assigning responsibility for responding to a fault condition in an information technology device, comprising:
> (a) receiving an alert from a monitored information technology device, the alert describing an event in the monitored information technology device;
> (b) automatically detecting an available administrator qualified to respond to the event;
> (c) automatically sending a first instant message to the available administrator, the instant message referencing the alert and requesting an acknowledgement;
> (d) receiving a second instant message from the available administrator, the second instant message containing the acknowledgement from the administrator; and
> (e) automatically assigning responsibility for the event to the available administrator.

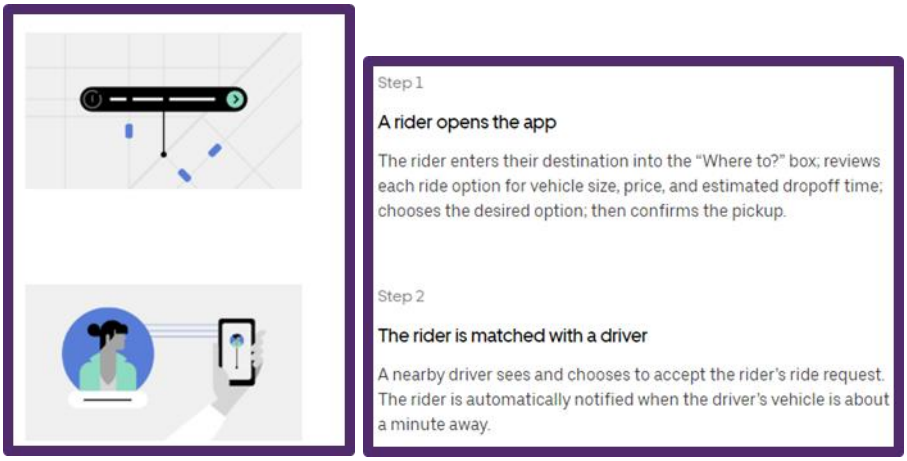
139. On information and belief, the Uber application or Uber Network, which includes the passenger application, driver application, Uber server, and all related technology (hereinafter, "Uber App") is a computer implemented method of responding to a problem condition.



"Requesting your Uber is easy—here's how it works:
- Just open the app and tell us where you're going.
- The app uses your location so your driver knows where to pick you up.
- You'll see your driver's picture, vehicle details, and can track their arrival on the map."

https://play.google.com/store/apps/details?id=com.ubercab&hl=en

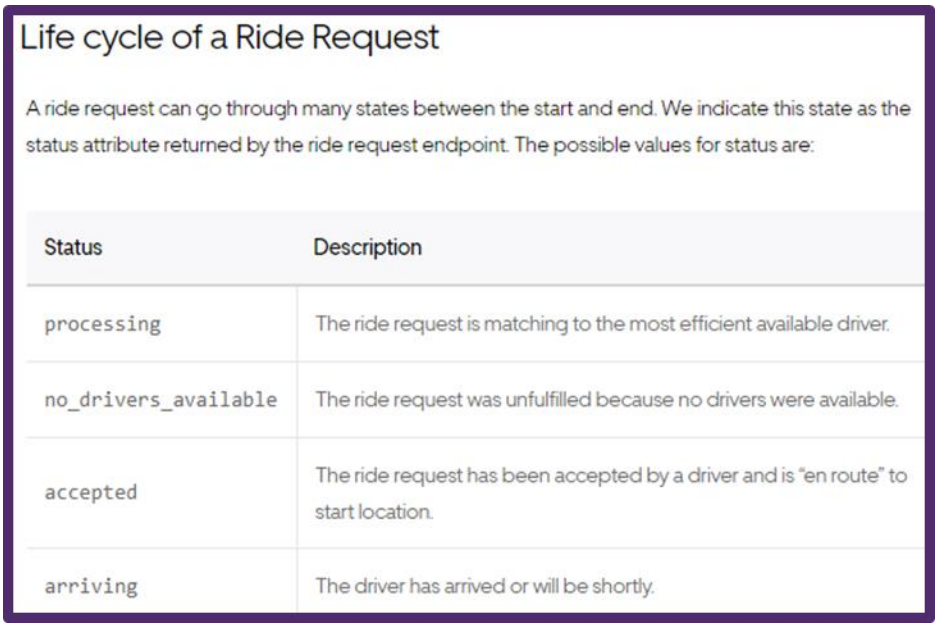
140. On information and belief, the Uber App receives an alert from a monitored information technology device, the alert describes an event in the monitored information technology device.



https://www.uber.com/us/en/about/how-does-uber-work/

https://developer.uber.com/docs/riders/ride-requests/tutorials/api/best-practices#indicating-ride-status-throughout-application

141. On information and belief, the Uber App automatically detects an available administrator qualified to respond to the event.



Life cycle of a Ride Request

A ride request can go through many states between the start and end. We indicate this state as the status attribute returned by the ride request endpoint. The possible values for status are:

Status	Description
`processing`	The ride request is matching to the most efficient available driver.
`no_drivers_available`	The ride request was unfulfilled because no drivers were available.
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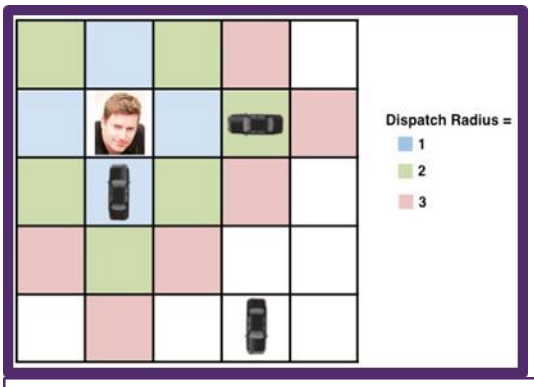
https://developer.uber.com/docs/riders/ride-requests/tutorials/api/best-practices

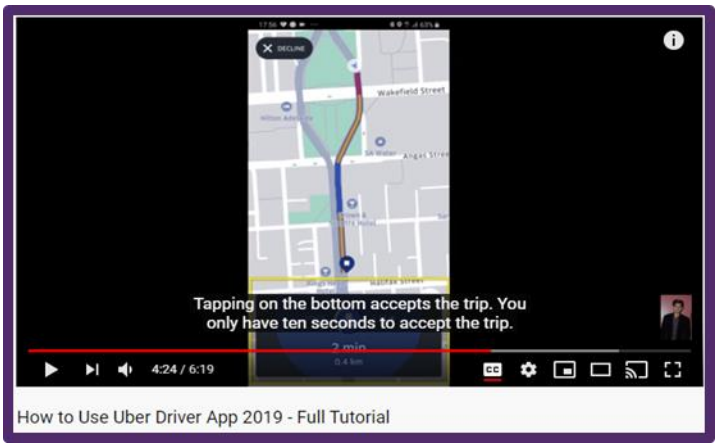


"We want to figure out how to optimize the dispatch radius, the farthest distance between a passenger and driver where we'll allow a request to go through…
… If the dispatch radius is limited to 1 unit, then only cars within the blue zone will see that request… As we increase the dispatch radius to 2 or 3 units, more cars are visible to accept the request."

https://www.uber.com/newsroom/semi-automated-science-using-an-ai-simulation-framework

Uber Passenger Application Screenshot February 13, 2020 *(emphasis added in red)*

142. On information and belief, the Uber App automatically sends a first instant message to the available administrator, the instant message references the alert and requests acknowledgment.



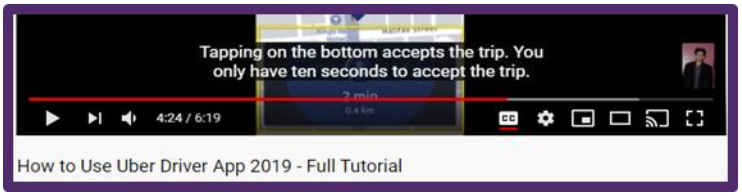
https://www.youtube.com/watch?v=5rtCduqp6wI

> "Accepting trip and delivery requests
> Once online, you'll automatically begin to receive requests in your area. Your phone will sound. Swipe to accept."

https://www.uber.com/us/en/drive/driver-app/

143. On information and belief, the Uber App receives a second instant message from the available administrator, the second instant message contains the acknowledgement from the administrator.

https://developer.uber.com/docs/riders/ride-requests/tutorials/api/best-practices#indicating-ride-status-throughout-application

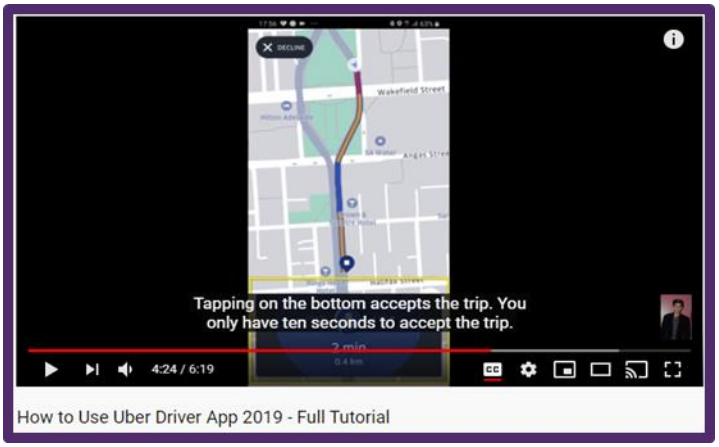


https://www.youtube.com/watch?v=5rtCduqp6wI

> "Accepting trip and delivery requests
> Once online, you'll automatically begin to receive requests in your area. Your phone will sound. Swipe to accept."

https://www.uber.com/us/en/drive/driver-app/

144. On information and belief, the Uber App automatically assigns responsibility for the event to the available administrator.



https://www.youtube.com/watch?v=5rtCduqp6wI

> "Accepting trip and delivery requests
> Once online, you'll automatically begin to receive requests in your area. Your phone will sound. Swipe to accept."

https://www.uber.com/us/en/drive/driver-app/

145. On information and belief, Defendant's actions have and continue to constitute active inducing infringement of at least claims 1-4, 5-13, 14-16, and 17 of the '215 patent in violation of 35 U.S.C. §271(b).

146. As a result of Defendant's infringement of at least claims 1-4, 5-13, 14-16, and 17 of the '215 patent, Plaintiff Quartz Auto has suffered monetary damages in an amount yet to be determined, and will continue to suffer damages in the future unless Defendant's infringing activities are enjoined by this Court. Defendant is liable to Plaintiff in an amount that adequately

compensates for such infringements, which, by law, cannot be less than a reasonable royalty, together with interest and costs as fixed by this Court under 35 U.S.C. § 284.

147. Defendant's wrongful acts have damaged and will continue to damage Plaintiff Quartz Auto irreparably, and Plaintiff has no adequate remedy at law for those wrongs and injuries. In addition to its actual damages, Plaintiff Quartz Auto is entitled to a permanent injunction restraining and enjoining Defendant and its agents, servants, and employees, and all person acting thereunder, in concert with, or on its behalf, from infringing at least claims 1-4, 5-13, 14-16, and 17 of the '215 patent.

COUNT V
PATENT INFRINGEMENT OF THE '616 PATENT

148. Plaintiff Quartz Auto repeats and realleges the above paragraphs, which are incorporated by reference as if fully restated herein.

149. Plaintiff Quartz Auto is the owner of all rights, title, and interest in the '616 patent.

150. Plaintiff Quartz Auto and its predecessors in interest have never licensed to Defendant under the '616 patent, nor has Plaintiff Quartz Auto otherwise authorized the Defendant to practice any part of the '616 patent.

151. The '616 patent is presumed valid under 35 U.S.C. § 282.

152. The '616 patent relates to, among other things, the management of mobile objects and a service platform for mobile objects.

153. On information and belief, Defendant operates a ride-hailing service that uses a passenger and driver application to manage mobile objects (vehicles).

154. **Direct Infringement:** On information and belief, Defendant has directly infringed and continues to directly infringe, either literally or under the doctrine of equivalents, one or more claims of the '616 patent, including for example (but not limited to) at least system claims 1-10,

method claims 11-15, and computer program claims 16-19 of the '616 patent by making, using, distributing, providing, supplying, selling, offering to sell, or importing without license or authority, Defendant's application that include infringing features. The infringing products includes applications that monitors the locations of drivers (mobile objects) and passengers within a geographic area. This is without Plaintiff Quartz Auto's authorization, in violation of 35 U.S.C. §271(a). A detailed infringement claim mapping is provided in paragraphs 158-160 below.

155. **Induced Infringement:** On information and belief, Defendant has and continues to promote, advertise, and instruct drivers and riders, and potential drivers and riders about Uber products, such as:

(i) Defendant's Drive or Ride downloadable applications for Android and Apple systems ((Android: https://play.google.com/store/apps/details?id=com.ubercab&hl=en_US) and (Apple: (https://apps.apple.com/us/app/uber/id368677368)),

(ii) an overview of how to use Uber's branded products (https://www.uber.com/us/en/ride/), including instructions for riders to use the services (https://www.uber.com/us/en/ride/how-it-works/), and

(iii) requirements for drivers to sign-up (https://www.uber.com/us/en/drive/requirements/).

Defendant's promotion, advertising, and instruction efforts include, at a minimum, maintenance of its own website http://www.uber.com, the production and distribution of instruction manuals, Frequently Asked Questions (FAQs) and how-to videos on the website, and other indicia of Uber branded products. (https://www.uber.com/us/en/ride/ and https://www.uber.com/us/en/drive/).

Defendant's software applications require both the rider and the driver to download the software applications for mobile computing devices, such as smartphones, laptops, and tablets, which

enables Uber to completely control the actions of both the riders and the drivers to use the infringing features of the products and methods for ride-hailing. On information and belief, Defendant continues to engage in these acts with knowledge of the '616 patent by the filing of this Complaint, and with the actual intent to cause the acts which it knew or should have known would induce actual infringement.

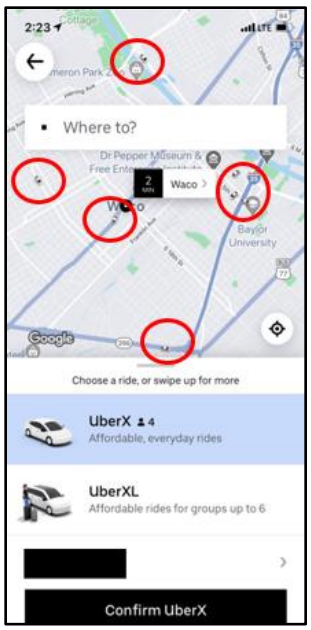
156. Defendant Uber has infringed the '616 patent by making, having made, using, importing, providing, supplying, distributing, selling, or offering for sale systems utilizing a method and system for tracking mobile objects.

157. **Detailed Mapping of Direct Infringement:** On information and belief, infringement of the '616 patent by these Uber ride-hailing products and applications is demonstrated below. System claim 1 of the '616 patent is representative of, and is of similar scope to method claim 11 and computer program claim 16 of the '616 patent.

158. System claim 1 is representative of the alleged claims:

> 1. A system comprising:
>
> a mobile object server operable to receive information from each of a plurality of mobile objects within a geographic space and perform a process associated with each mobile object; and
>
> a registration server operable to register a first additional process that is to be performed in addition to a first basic process common to the plurality of mobile objects, in association with one mobile object among the plurality of mobile objects, wherein the mobile object server is operable to perform, as the first additional process, a process of providing notification that the one mobile object has become distanced from a predetermined location or region.

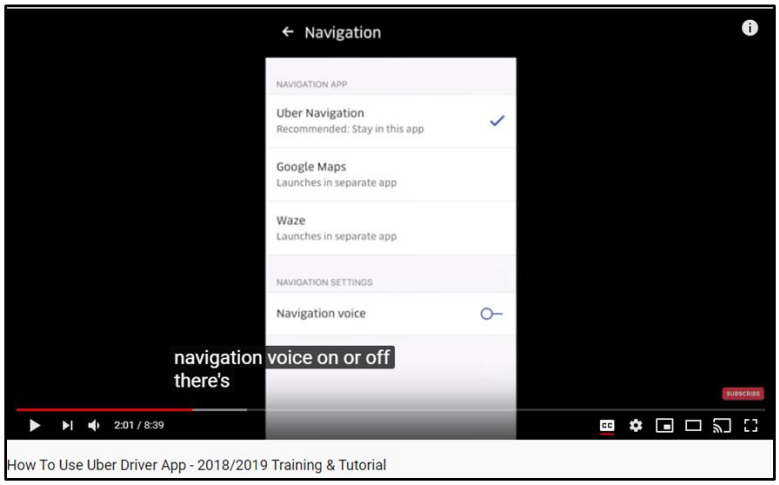
159. On information and belief, the Uber application or Uber Network, which includes the passenger application, driver application, Uber server, and all related technology (hereinafter, "Uber App") is a system comprising a mobile object server operable to receive information from each of a plurality of mobile objects within a geographic space and perform a process associated with each mobile object.

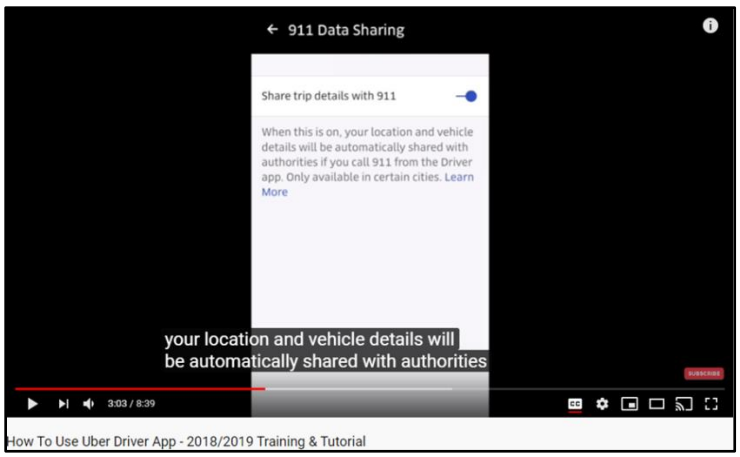


Uber Passenger Application Screenshot February 13, 2020 *(emphasis added in red)*

"Uber's service is built around their smartphone app used by both drivers and customers, which gives them an opportunity to collect GPS, gyroscope and accelerometer data during Uber trips. Data is constantly collected during trips and sent to Uber's servers for processing and long-term storage.
... but also stores data to find long-term driver- or location-specific trends."

https://www.geotab.com/blog/uber-driver-tracking/





https://www.youtube.com/watch?v=fvg5-vZDjsU

> When you throw in the fact that the Uber Driver navigation also pulls data from other platforms like TomTom, Google Maps, Bing Maps, and more. The navigation also pulls data from Uber Beacon's that further solidifies the accuracy of incoming data that drivers receive.

https://uberdriverthings.com/best-navigation-apps-for-rideshare-drivers/

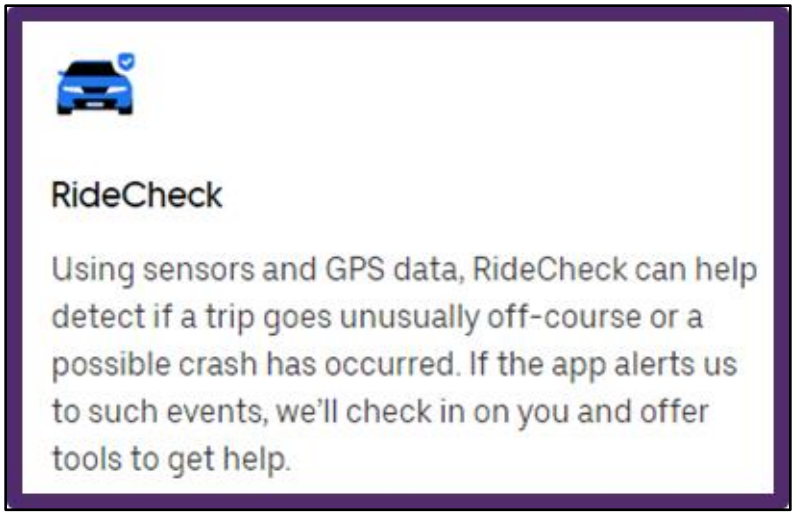
160. On information and belief, the Uber App is a system comprising a registration server operable to register a first additional process that is to be performed in addition to a first basic process common to the plurality of mobile objects, in association with one mobile object among the plurality of mobile objects, wherein the mobile object server is operable to perform, as the first additional process, a process of providing notification that the one mobile object has become distanced from a predetermined location or region.

Uber Passenger Application Screenshot February 13, 2020 *(emphasis added in red)*

> "Uber's service is built around their smartphone app used by both drivers and customers, which gives them an opportunity to collect GPS, gyroscope and accelerometer data during Uber trips. Data is constantly collected during trips and sent to Uber's servers for processing and long-term storage."

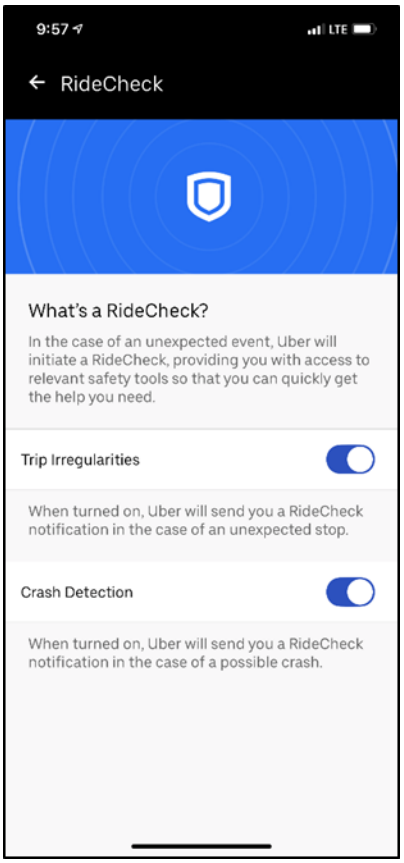
https://www.geotab.com/blog/uber-driver-tracking/

https://www.uber.com/us/en/drive/safety/



https://www.uber.com/newsroom/ridecheck/

https://www.engadget.com/2019/09/17/uber-ridecheck-live-us/



Uber Driver Application Screenshot February 14, 2020

> Once the software has detected something out of the ordinary, both the rider and the driver will get a push notification asking if everything is all right.
>
> From there, passengers can let the app know that everything is running smoothly, or they can take other actions like reporting an issue to Uber or contacting emergency personnel.

https://www.usatoday.com/story/tech/2019/09/17/ridecheck-uber-start-checking-you-when-rides-get-strange/2310369001/

161. On information and belief, Defendant's actions have and continue to constitute active inducing infringement of at least claims 1-10, 11-15, and 16-19 of the '616 patent in violation of 35 U.S.C. § 271(b).

162. As a result of Defendant's infringement of at least claims 1-10, 11-15, and 16-19 of the '616 patent, Plaintiff Quartz Auto has suffered monetary damages in an amount yet to be determined, and will continue to suffer damages in the future unless Defendant's infringing

activities are enjoined by this Court. Defendant is liable to Plaintiff in an amount that adequately compensates for such infringements, which, by law, cannot be less than a reasonable royalty, together with interest and costs as fixed by this Court under 35 U.S.C. § 284.

163. Defendant's wrongful acts have damaged and will continue to damage Plaintiff Quartz Auto irreparably, and Plaintiff has no adequate remedy at law for those wrongs and injuries. In addition to its actual damages, Plaintiff Quartz Auto is entitled to a permanent injunction restraining and enjoining Defendant and its agents, servants, and employees, and all person acting thereunder, in concert with, or on its behalf, from infringing at least claims 1-10, 11-15, and 16-19 of the '616 patent.

COUNT VI
PATENT INFRINGEMENT OF THE '275 PATENT

164. Plaintiff Quartz Auto repeats and realleges the above paragraphs, which are incorporated by reference as if fully restated herein.

165. Plaintiff Quartz Auto is the owner of all rights, title, and interest in the '275 patent.

166. Plaintiff Quartz Auto and its predecessors in interest have never licensed to the Defendant under the '275 patent, nor has Plaintiff Quartz Auto otherwise authorized the Defendant to practice any part of the '275 patent.

167. The '275 patent is presumed valid under 35 U.S.C. § 282.

168. The '275 patent relates to, among other things, adjusting vehicle timing in a transportation network.

169. On information and belief, Defendant operates a ride-hailing service that uses a passenger and driver application that collects passenger traveling information within a transportation network and adapts vehicle timing dependent on that information.

170. **Direct Infringement:** On information and belief, Defendant has directly infringed and continues to directly infringe, either literally or under the doctrine of equivalents, one or more claims of the '275, including for example (but not limited to) at least method claims 1-11, computer program claims 12-16, and system claims 17-18 of the '275 patent by making, using, distributing, providing, supplying, selling, offering to sell, or importing without license or authority, Defendant's application that include infringing features. The infringing products include applications that can be used on a variety of remote computing devices and gather and transmit location-specific information. When a passenger opens the application and selects a destination, the passenger's GPS location information is automatically recorded, and that passenger's location information is sent to drivers in the vicinity of the potential pick-up location. Vehicle time is adjusted to account for numerous factors, including bad weather, rush hour, special events, and higher passenger demand. This is without Plaintiff Quartz Auto's authorization, in violation of 35 U.S.C. § 271(a). A detailed infringement claim mapping is provided in paragraphs 174-176 and paragraphs 177-182 below.

171. **Induced Infringement:** On information and belief, Defendant has and continues to promote, advertise, and instruct drivers and riders, and potential drivers and riders about Uber products, such as:

(i) Defendant's Drive or Ride downloadable applications for Android and Apple systems ((Android: https://play.google.com/store/apps/details?id=com.ubercab&hl=en_US) and (Apple: (https://apps.apple.com/us/app/uber/id368677368)),

(ii) an overview of how to use Uber's branded products (https://www.uber.com/us/en/ride/), including instructions for riders to use the services (https://www.uber.com/us/en/ride/how-it-works/), and

(iii) requirements for drivers to sign-up (https://www.uber.com/us/en/drive/requirements/). Defendant's promotion, advertising, and instruction efforts include, at a minimum, maintenance of its own website http://www.uber.com, the production and distribution of instruction manuals, Frequently Asked Questions (FAQs) and how-to videos on the website, and other indicia of Uber branded products. (https://www.uber.com/us/en/ride/ and https://www.uber.com/us/en/drive/).

Defendant's software applications require both the rider and the driver to download the software applications for mobile computing devices, such as smartphones, laptops, and tablets, which enables Uber to completely control the actions of both the riders and the drivers to use the infringing features of the products and methods for ride-hailing. On information and belief, Defendant continues to engage in these acts with knowledge of the '275 patent by the filing of this Complaint, and with the actual intent to cause the acts which it knew or should have known would induce actual infringement.

172. Defendant Uber has infringed the '275 patent by making, having made, using, importing, providing, supplying, distributing, selling, or offering for sale systems utilizing a method and system for adjusting vehicle timing.

173. **Detailed Mapping of Direct Infringement:** On information and belief, infringement of the '275 patent by these Uber ride-hailing products and applications is demonstrated below. Method claim 1 of the '275 patent is representative of, and is of similar scope to computer program claim 12 of the '275 patent. System claim 17 is separately addressed.

174. Method claim 1 is representative of alleged computer program claim 12:

1. A method comprising:

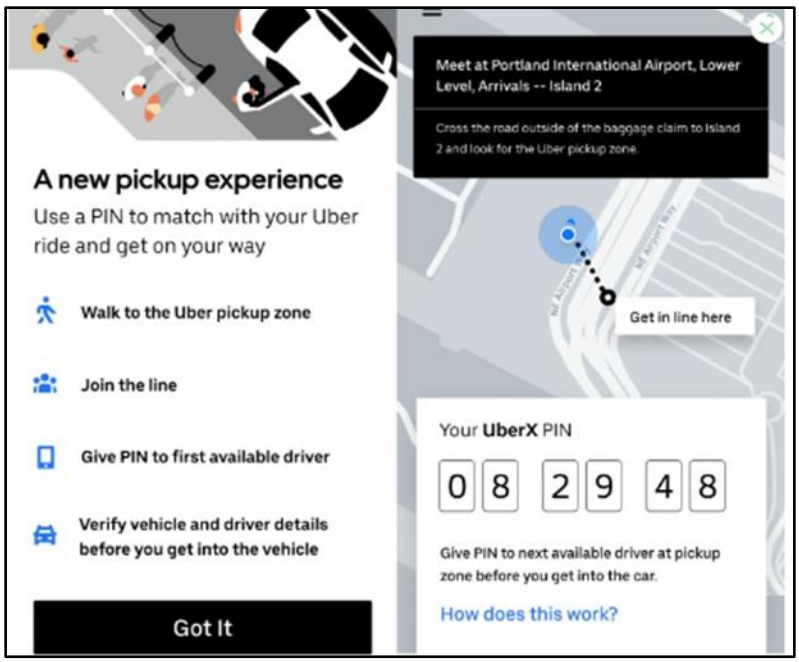
obtaining, by one or more processor, passenger information of one or more passenger traveling within a transportation network, wherein the passenger information includes passenger location information; and

providing, by the one or more processor, an output based on a processing of the passenger information, wherein the processing includes processing to determine an adapted timetable for providing a reduced cumulative wait time.

175. On information and belief, the Uber application or Uber Network, which includes the passenger application, driver application, Uber server, and all related technology (hereinafter, "Uber App") obtains, by one or more processor, passenger information of one or more passenger traveling within a transportation network, wherein the passenger information includes passenger location information.

> "In cities where Uber is available, you can use the Uber app to request a ride. When a nearby driver accepts your request, the app displays an estimated time of arrival for the driver heading to your pickup location. The app will notify you when the driver is about to arrive.
>
> The Uber app also provides info about the driver with whom you will ride, including first name, vehicle type, and license plate number. This info helps the two of you connect at your pickup location."

https://help.uber.com/riders/article/how-does-uber-work?nodeId=738d1ff7-5fe0-4383-b34c-4a2480efd71e



Uber is piloting a new PIN feature at the Portland International Airport that will give riders a one-time six-digit numeric code in an effort to speed up pickup times and reduce traffic congestion.

https://www.google.com/amp/s/techcrunch.com/2019/05/13/uber-launches-pin-feature-to-cut-wait-times-at-airports-starting-in-portland/amp/

How it works

Once riders order their UberX, they make their way to the dedicated pickup zone. The app will briefly give riders information on how the PIN feature works. A six-digit personal identification number is then assigned to the rider, who is instructed to provide it to the first available driver.

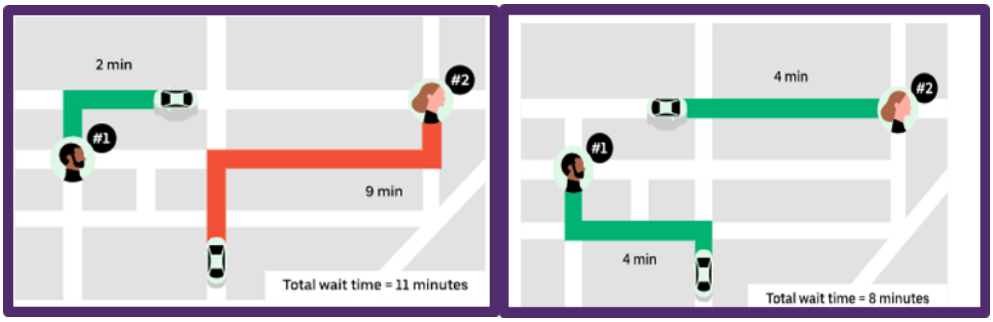
Meanwhile, the driver, who has received a pickup opportunity at the airport, heads to the pickup location and will get in a queue, waiting for the next available rider. (Drivers will be allowed to accept or snooze if they're busy. Four minutes is the snooze duration time.)

The rider PIN is given to the driver, who types the one-time numeric code into the app. The ride commences as normal, although Uber still recommends the rider go through the standard verification checks before setting off in the vehicle.

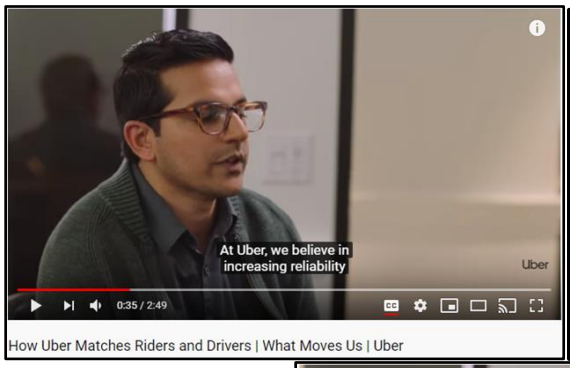
https://www.google.com/amp/s/techcrunch.com/2019/05/13/uber-launches-pin-feature-to-cut-wait-times-at-airports-starting-in-portland/amp/

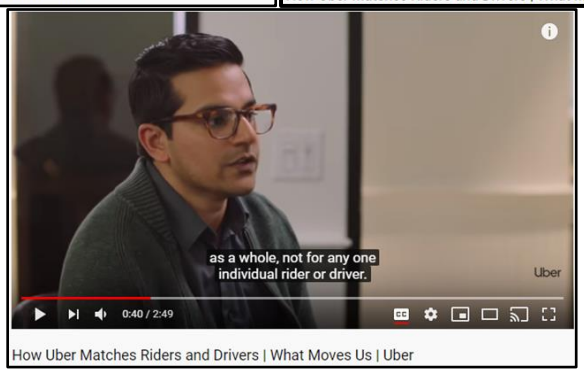
176. On information and belief, the Uber App provides by one or more processor, an output based on a processing of the passenger information, wherein the processing includes processing to determine an adapted timetable for providing a reduced cumulative wait time.

> "But if we wait just a few seconds after a request, it can make a big difference. It's enough time for a batch of potential rider-driver matches to accumulate. The result is better matches, and everyone's collective wait time is shorter."

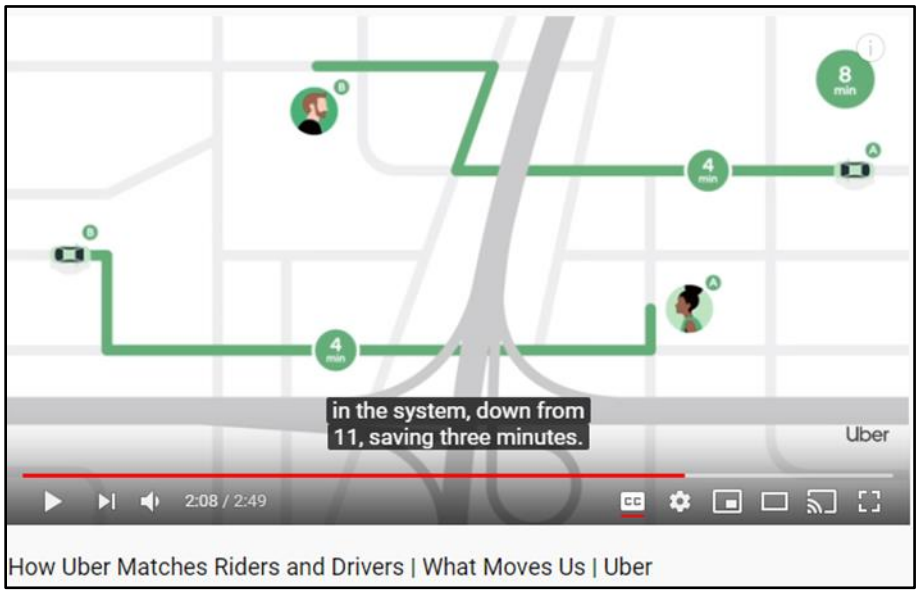


https://marketplace.uber.com/matching
(demonstrates First to Request vs. Batch Matching)





https://www.youtube.com/watch?v=Vl6t-Q9ICRw&t=1s



https://www.youtube.com/watch?v=Vl6t-Q9ICRw&t=1s

https://www.youtube.com/watch?v=GyPq2joHZv4&feature=youtu.be&t=346

177. System claim 17 of the alleged claims:

17. A system comprising:
a memory;
one or more processor in communication with the memory; and

program instructions executable by the one or more processor via the memory to perform a method, the method comprising:

obtaining passenger information of one or more passenger traveling within a transportation network, wherein the passenger information includes passenger location information; and

providing one or more output based on a processing of the passenger information, wherein the processing includes determining one or more flow matrix, using the one or more flow matrix to determine a cumulative wait time, and determining an adapted timetable using the cumulative wait time, wherein the output includes the adapted timetable, the adapted timetable having one or more adjusted vehicle timing, and wherein the output is transmitted to a computing node of a vehicle operator of the transportation network.

178. On information and belief, the Uber application or Uber Network, which includes the passenger application, driver application, Uber server, and all related technology (hereinafter, "Uber App") is a system comprising a memory.

> "In cities where Uber is available, you can use the Uber app to request a ride. When a nearby driver accepts your request, the app displays an estimated time of arrival for the driver heading to your pickup location. The app will notify you when the driver is about to arrive.
>
> The Uber app also provides info about the driver with whom you will ride, including first name, vehicle type, and license plate number. This info helps the two of you connect at your pickup location."

https://help.uber.com/riders/article/how-does-uber-work?nodeId=738d1ff7-5fe0-4383-b34c-4a2480efd71e

179. On information and belief, the Uber App is a system comprising one or more processor in communication with the memory.

> "In cities where Uber is available, you can use the Uber app to request a ride. When a nearby driver accepts your request, the app displays an estimated time of arrival for the driver heading to your pickup location. The app will notify you when the driver is about to arrive.
>
> The Uber app also provides info about the driver with whom you will ride, including first name, vehicle type, and license plate number. This info helps the two of you connect at your pickup location."

https://help.uber.com/riders/article/how-does-uber-work?nodeId=738d1ff7-5fe0-4383-b34c-4a2480efd71e

180. On information and belief, the Uber App is a system with program instructions executable by the one or more processor via the memory to perform a method.

> "In cities where Uber is available, you can use the Uber app to request a ride. When a nearby driver accepts your request, the app displays an estimated time of arrival for the driver heading to your pickup location. The app will notify you when the driver is about to arrive.
>
> The Uber app also provides info about the driver with whom you will ride, including first name, vehicle type, and license plate number. This info helps the two of you connect at your pickup location."

https://help.uber.com/riders/article/how-does-uber-work?nodeId=738d1ff7-5fe0-4383-b34c-4a2480efd71e

181. On information and belief, the Uber App is a system that performs a method to obtain passenger information of one or more passenger traveling within a transportation network, wherein the passenger information includes passenger location information.

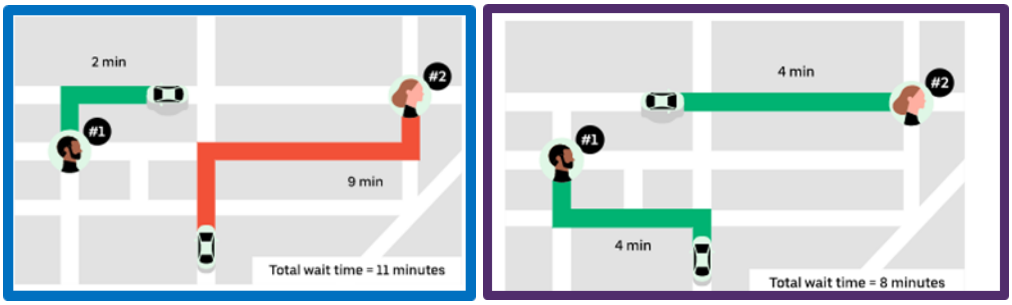
> "In cities where Uber is available, you can use the Uber app to request a ride. When a nearby driver accepts your request, the app displays an estimated time of arrival for the driver heading to your pickup location. The app will notify you when the driver is about to arrive.
>
> The Uber app also provides info about the driver with whom you will ride, including first name, vehicle type, and license plate number. This info helps the two of you connect at your pickup location."

https://help.uber.com/riders/article/how-does-uber-work?nodeId=738d1ff7-5fe0-4383-b34c-4a2480efd71e

182. On information and belief, the Uber App is a system that performs a method to provide one or more output based on a processing of the passenger information, wherein the processing includes determining one or more flow matrix, using the one or more flow matrix to determine a cumulative wait time, and determining an adapted timetable using the cumulative wait time, wherein the output includes the adapted timetable, the adapted timetable having one or more adjusted vehicle timing, and wherein the output is transmitted to a computing node of a vehicle operator of the transportation network.

> "But if we wait just a few seconds after a request, it can make a big difference. It's enough time for a batch of potential rider-driver matches to accumulate. The result is better matches, and everyone's collective wait time is shorter."

https://marketplace.uber.com/matching



https://marketplace.uber.com/matching
(demonstrates First Request v. Batch Matching)

> "But if we wait just a few seconds after a request, it can make a big difference. It's enough time for a batch of potential rider-driver matches to accumulate. The result is better matches, and everyone's collective wait time is shorter."

https://marketplace.uber.com/matching

183. On information and belief, Defendant's actions have and continue to constitute active inducing infringement of at least claims 1-11, 12-16, and 17-18 of the '275 patent in violation of 35 U.S.C. §271(b).

184. As a result of Defendant's infringement of at least claims 1-11, 12-16, and 17-18 of the '275 patent, Plaintiff Quartz Auto has suffered monetary damages in an amount yet to be determined, and will continue to suffer damages in the future unless Defendant's infringing activities are enjoined by this Court. Defendant is liable to Plaintiff in an amount that adequately compensates for such infringements, which, by law, cannot be less than a reasonable royalty, together with interest and costs as fixed by this Court under 35 U.S.C. § 284.

185. Defendant's wrongful acts have damaged and will continue to damage Plaintiff Quartz Auto irreparably, and Plaintiff has no adequate remedy at law for those wrongs and injuries. In addition to its actual damages, Plaintiff Quartz Auto is entitled to a permanent injunction restraining and enjoining Defendant and its agents, servants, and employees, and all person acting

thereunder, in concert with, or on its behalf, from infringing at least claims 1-11, 12-16, and 17-18 of the '275 patent.

PRAYER FOR RELIEF

WHEREFORE, Plaintiff Quartz Auto respectfully requests that this Court enter:

A. A judgment in favor of Plaintiff Quartz Auto that Defendant has been and is infringing at least claims 1-33 of the '004 patent, 1-22 of the '464 patent, claims 1-23 of the '085 patent, claims 1-17 of the '215 patent, claims 1-19 of the '616 patent, and claims 1-18 of the '275 patent pursuant to 35 U.S.C. §§ 271(a) and/or 271(b);

B. A permanent injunction enjoining Defendant and its officers, directors, agents, servants, affiliates, employees, divisions, branches, subsidiaries, parents, and all others acting in concert or privity with any of them from infringing, or inducing the infringement of, at least claims at least claims 1-33 of the '004 patent, claims 1-22 of the '464 patent, claims 1-23 of the '085 patent, claims 1-17 of the '215 patent, claims 1-19 of the '616 patent, and claims 1-18 of the '275 patent;

C. A judgment awarding Plaintiff Quartz Auto all damages adequate to compensate it for Defendant's infringement of the Quartz Auto Patents under 35 U.S.C. § 284, and in no event less than a reasonable royalty for Defendant's acts of infringement, including all pre-judgement and post-judgment interest at the maximum rate permitted by law, and also any past damages permitted under 35 U.S.C. § 286, as a result of Defendant's infringement of at least at least claims 1-33 of the '004 patent, claims 1-22 of the '464 patent, claims 1-23 of the '085 patent, claims 1-17 of the '215 patent, claims 1-19 of the '616 patent, and claims 1-18 of the '275 patent;

D. An assessment of costs, including reasonable attorney fees pursuant to 35 U.S.C. § 285, and prejudgment interest against Defendant; and

E. Such other and further relief as this Court may deem just and proper.

JURY TRIAL DEMANDED

Pursuant to FED. R. CIV. P. 38, Plaintiff Quartz Auto hereby demands a trial by jury on all issues so triable.

Dated: February 18, 2020

Respectfully submitted,

By: /s/ Thomas M. Dunlap

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