(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
2 October 2014 (02.10.2014)

WIPO | PCT

(10) International Publication Number
WO 2014/155100 A1

(51) International Patent Classification:
G06F 17/30 (2006.01) *G06Q 10/10* (2012.01)
G06F 17/24 (2006.01) *G06T 13/80* (2011.01)
G06F 19/00 (2011.01)

(21) International Application Number:
PCT/GB2014/050947

(22) International Filing Date:
25 March 2014 (25.03.2014)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
1305497.8 26 March 2013 (26.03.2013) GB

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(81) Designated States *(unless otherwise indicated, for every kind of national protection available)*: AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IR, IS, JP, KE, KG, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SA, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

(84) Designated States *(unless otherwise indicated, for every kind of regional protection available)*: ARIPO (BW, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, RU, TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, KM, ML, MR, NE, SN, TD, TG).

Published:

— *with international search report (Art. 21(3))*

(54) Title: INPUTTING AND DISPLAYING DATA

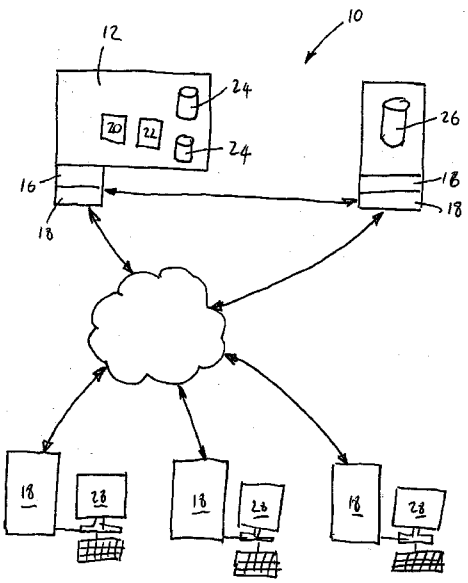

Figure 1

(57) Abstract: A data capture system (10) comprising a web-accessible server (12) and a client computer (18), the web accessible server (12) comprising a database (24) for storing data and the client computer(18) comprising an application adapted to provide a graphical user interface (28) for inputting data into, and for interrogating data stored in, the database (24), the said application additionally comprising an object-based animation program permitting a user of the client computer to create and/or render an animation by positioning and moving objects (55) in the graphical user interface (28), and wherein the server (12) and client computer (18) are operatively interconnected such that the properties (41, 42, 44) attributed to objects (55) in the animation are stored in the said database (24) to enable the animation to be re-rendered reproducibly on a second client computer (18) comprising the said application which is operatively interconnected to the server(12).

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INPUTTING AND DISPLAYING DATA

Description:

This invention relates to improvements in and relating to data input and display methods.

In many situations, it is necessary and/or desirable for people to be able to input data into electronic databases. It has become customary, in recent years, for various service providers to make web-based data input portals available to their users. Such systems offer a number of advantages over paper-based or telephone-based systems insofar as it enables the user to input data at their convenience and can reduce the number of data input operatives that the service provider needs to employ.

One service sector where data input is of paramount importance is legal services whereby claims data often needs to be made available to, and shared between, various parties to a dispute. One of the key stages in the management and prosecution of legal disputes has been identified as being the initial capture of data by the parties to a dispute, that is to say, the data forming the basis of the claim. Capturing all of the relevant data in a timely and accurate manner is often an important factor in engaging and retaining the parties to the dispute.

In the case of road traffic accidents (RTAs), say, there is usually more than one party to a dispute, for example: a driver and an injured pedestrian; or the drivers of two vehicles involved in a collision etc.. In determining fault and liability, it is often necessary to compare the accounts of the various parties to determine which facts are undisputed, which facts are in dispute, and/or which parts of the parties' accounts differ materially, giving rise to suspicion of falsehood.

The mere existence of disparities in the parties' accounts does not necessarily mean that one of the parties is not telling the truth, however: there may be legitimate reasons for discrepancies, such as different viewpoints, imperfect recollection, and any significant hiatus between the incident and the account of it being taken. In order to address this issue, in particular,

it is often desirable to attempt to capture the parties' accounts as soon as possible after the incident giving rise to the claim or complaint.

Furthermore, and specifically in relation to RTA cases, many accident report forms that the parties are asked to complete are provided in paper form: it being up to the individual parties to attempt to record their recollections of events in the form of a drawn "storyboard". Unfortunately, people's artistic abilities differ enormously, as do their abilities to think in three-dimensional space, and so the act of recording the incident presents serious difficulty to some people who are unable to either record a sequence of events in a meaningful form, or to be able to verify that what they have included in their report accurately reflects the events as they recall them. Moreover, differences in peoples' perception abilities means that different interpretations can arise even when standardised recording procedures are used.

A need therefore exists for an improved data input method that addresses one or more of the above problems.

According to the invention, there is provided a data capture system comprising a web-accessible server and a client computer, the web accessible server comprising a database for storing data and the client computer comprising an application adapted to provide a graphical user interface for inputting data into, and for interrogating data stored in, the database, the said application additionally comprising an object-based animation program permitting a user of the client computer to create and/or render an animation by positioning and moving objects in the graphical user interface, and wherein the server and client computer are operatively interconnected such that the properties attributed to objects in the animation are stored in the said database to enable the animation to be re-rendered reproducibly on a second client computer comprising the said application which is operatively interconnected to the server.

Suitably, the invention thus overcomes a number of problems associated with paper- or telephone-based data input methods, and similar animation based simulators. Specifically, the object-based animation program provides a convenient and intuitive platform for quickly and

accurately producing an animation of an event. Also, because the animation is object-based, as opposed to being a frame-based animation, it is possible to manipulate the object property data stored in the database to re-render or adjust the animation. Also, by only sharing object property data, rather than video footage, the bandwidth requirements of the system can be greatly reduced.

The data capture system is suitably useable as a data capture, review and analysis platform for use in legal claims management.

The web-accessible server suitably comprises access control modules to restrict access to data by unauthorised users. The access control, where provided, is suitably configurable to identify interested parties to a particular matter and to grant them access to selected other party's data.

The server comprises a database for storing data, but may additionally comprise further databases, which may be local databases or remote databases. The server is suitably configured to allow data to be imported from an external database into the main database, or to provide hyperlinks between data sets in various databases to reduce the data storage requirements on the main database by cross-referring to repeat, and/or lookup data in another database.

The client computer comprises an application adapted to provide a graphical user interface. The application may be a stand-alone program or a web browser plugin, either of which may be downloadable from a, or the, server via an internet connection.

The application on the client computer facilitates the inputting of data into the database. This may suitably be accomplished by providing lookup and drop-down input fields that auto-populate using historical data, or lookup data from one or more databases associated with the server.

The object-based animation program enables a user of the client computer to create and/or render an animation by positioning and moving objects in the graphical user interface. The animation program is suitably layer-based, allowing a background scene to be overlaid by objects moving relative to features in the background scene. To simplify the user experience, the server's database suitably comprises a set of pre-defined background scenes corresponding to different

scenarios, which a client computer user is able to choose from. Objects to be animated are suitably provided on-screen, which can be placed by a user at desired locations. The properties of the objects, for example vehicle sizes, colours, velocities, occupancies etc. are suitably user-configurable, but most preferably configurable using lookup data obtained from one or more of the server's databases.

The server and client computer are operatively interconnected such that the properties attributed to objects in the animation are stored in the database. Such a configuration allows the animation to be rendered and/or re-rendered reproducibly any one of a number of client computers comprising the object-based animation software.

A preferred embodiment of the invention shall now be described by way of example only, with reference to the accompanying drawings in which:

Figure 1 is a schematic system diagram representative of the invention; and

Figures 2 to 7 are schematic screen shots of a GUI of the application on the client computer of Figure 1.

In Figure 1, a system 10 according to the invention comprises a web-accessible server 12 having a communications port 14 accessible via an access protocol 16 by a web-enabled client computer 18. The access protocol 16 provides a security firewall and access control enabling only pre-authorised client computers 18 to access the server 12 via a username & password login, or another security mechanism, e.g. smart card access.

The server 12 comprises a central processing unit (CPU) 20 that interfaces with a data controller 22 that controls the flow of data from one or more databases 24, located on the server, or remotely 26, e.g. on another connected server.

A first one of the databases 24 is configured to store data inputted by users of the system 10, and provides a central repository of information that can be shared between client computers 18 according to pre-defined security access controls. A firewall and access control module (not shown) is suitably provided to control access to shared data on the database 24.

The database 24 additionally comprises a client data store containing user information, which client store is configured to cross-reference individual users' credentials using identifiers. For example, a claim may be assigned a docket reference, which is shared between two or more users, e.g. the parties to a dispute, a claims handler and one or more legal teams. Access to certain, e.g. confidential, information can be restricted or shared as appropriate using access controls built into the system. Thus, the various parties to a particular case can upload, share and access data relevant to that case, whilst also being able to access data pertaining to different, or inter-related cases, depending on the access controls that have been applied.

A second one of the databases 26 suitably contains lookup information that can be used to rapidly populate the main database 24. For example, an external database may contain address, contact and vehicle details facilitating the input of large amounts of data. In one example, a user could input their vehicle's registration number via a client computer 18, and the server 12 interrogates the external databases 26 to determine the registered owner's name and address, the vehicle specifications, etc. These data can be imported into the main database 24 for the user to approve/accept as is, or to modify/override, as appropriate. Thus, the amount of manual data inputting required is reduced.

Client users are provided with a URL of a web portal of the server 12, and access credentials, for example, appended to an insurance policy schedule. Client users are therefore able to access the server 12 and to log in using the supplied credentials. The server 12 then offers the option to proceed using an application that is loaded into the client's web browser, e.g. as a plugin, or to download an application from the server 12 which provides enhanced functionality. Either way, an application or plugin is loaded on the client computer 18 that provides a GUI for the server's main database 24.

Referring now to Figure 2, in the case of a typical insurance claim, say, a user will first be prompted to input their name 30, address 32 and date of birth 34, which is preferably facilitated by

using lookup data and drop-down boxes 31, 33, 35 as previously described, thus reducing, as far as is practicably possible, the amount of direct user input. The user then clicks "next" 36 in the GUI 28.

The process then proceeds, as shown in Figure 3, whereby the user inputs a vehicle registration number 41, and the server provides an image of the vehicle 40 and some technical data 42 that can be approved by the user. Each vehicle has a specific seat layout, which is shown in the vehicle image 40, and the user is asked to identify the seat that he or she occupied by clicking as appropriate 44, before moving on to the next step 36.

In Figure 4, the user is asked to answer whether there were any other passengers in the vehicle, and if the answer is "yes", then the user is asked to input data for a person in each seating position as previously described 45. For each new passenger, a record set is created in the main database 24 and allocated to this case in question. Thus, another user can log in to upload their details and the two cases will be matched and linked to one another in the main database 24. Such a system facilitates comparison of user data, for example, to check whether the parties' stories correspond, or whether there are any material discrepancies.

Suitably, the system 10 is configured to use heuristics, so that it can ignore minor discrepancies, such as an incorrect name spelling, but which does flag-up major discrepancies, for example, if two or more claimants claim to have been in the same seat position at the time of the accident. A matching score is used to identify cases with significant differences, and to flag them up for manual review by a system administrator, or in a report that is circulated to selected other users of the system.

Once all the relevant vehicle and personnel data has been entered, the user is asked to describe the incident, as they recall it. This is the main problem in existing accident report forms, whereby a user has to sketch the scene and correctly place the vehicles and indicate their relative positions and movements. To facilitate this process, the user is asked to select from a number of pre-defined road layouts 47, as shown in Figure 5, and then to drag and drop the vehicles 55 into position, as shown in Figure 6. The vehicles are presented graphically as icons in a menu bar 49, and

can be dragged, dropped and rotated to establish their starting positions. The user then clicks "next" 36 and is prompted to move the vehicles on the road plan to a second position, as shown in Figure 7, which process can be repeated until the "end positions", i.e. after the incident, have been indicated. The user then clicks "next" 36 and the client computer application runs an animation by moving the objects through their various indicated positions. The user is able to refine the animation by adjusting the speed and direction of the vehicles, by pausing the animation, and by dragging the vehicles/objects to altered positions, which positions are stored in the main database 24. When the user is happy that the animation correctly reflects the incident as they recall it, they can approve the animation and exit the system, or add additional comments according to various on-screen prompts.

The system thus enables a user to readily provide an account of an incident, and to review it in a comprehensible manner, that is to say, by way of watching an animation of the incident, and to approve or correct it at will.

The system 10 is configured such that the animation is rendered on the client computer 18 using the application or plugin, based on the data points (locations of the various objects relative to the standardised road layouts) and object descriptions (type of vehicle etc.) stored in the main database 24. Alternatively, the client computer's 18 web browser is able to render the animation using, for example, a media player, embedded object, applet, or snap-in such as Macromedia^{RTM} Flash^{RTM} or Java^{RTM}. Other RTA "simulators", by contrast, render an animation on the server side of the system, or render the animation in a "fixed" format, such as a movie file. The advantages of using object- and vector-based animation techniques are as several:

Firstly, the amount of data that needs to be stored on the server 12 is greatly reduced, and since only the data points and object definitions need to be sent over the internet between the server 12 and client computer 18, the bandwidth requirements are vastly reduced, compared with video streaming technology. In other words, the animation and processing is done on the client computer side using an application or plugin, rather than on the server.

Secondly, the users are able to modify and update their data at a later time, without having to transfer large amounts of video files etc. Thus, if one party to a dispute does not recall the vehicle registration number or model of the other vehicle involved in an RTA, when the other party uploads their data, the firth party's account can be updated to include the missing data. Alternatively, a user may recall something at a later date, such as a swerve, and this can be superimposed into the account of the incident, without having to re-render everybody's version of the animation.

Thirdly, the use of object- and vector-based animation techniques allows different user's accounts of an incident to be objectively compared. For instance, discrepancies in start or end positions, or estimated speeds can be readily identified by calculating the differences between the user's vectors, etc.

Fourthly, it is possible to readily overlay different users' accounts of the incident to facilitate visual comparisons to be made, thus facilitating the identification of obvious or subtle discrepancies.

It will also be appreciated that the use of vector- and object-based animation in such a situation enables the server to learn from past experiences. In one example, the outcomes of claims can be recorded in the main database, alongside party and vehicle data, which has many uses. For example, it may be possible to pre-determine a probability of liability or fault by comparing instant case records with previously-decided cases, and/or to separate simpler cases from more complex ones. Also, since the party's details and their representative's details are logged in a common database, it may be possible to identify, for different types of claim, e.g. a rear end shunt, which representatives (lawyers) tend to perform best in claimant and defendant roles. This type of data is very useful to claims handlers and insurance companies as it enables them to assess more readily the likely outcome of a dispute, whether the case is likely to be contested, and which representatives might be best suited to handling a particular dispute.

Claims:

1. A data capture system comprising a web-accessible server and a client computer, the web accessible server comprising a database for storing data and the client computer comprising an application adapted to provide a graphical user interface for inputting data into, and for interrogating data stored in, the database, the said application additionally comprising an object-based animation program permitting a user of the client computer to create and/or render an animation by positioning and moving objects in the graphical user interface, and wherein the server and client computer are operatively interconnected such that the properties attributed to objects in the animation are stored in the said database to enable the animation to be re-rendered reproducibly on a second client computer comprising the said application which is operatively interconnected to the server.
2. A data capture system as claimed in claim 1, wherein the web-accessible server comprises an access control module.
3. A data capture system as claimed in claim 2, wherein the access control is configurable identify related parties to a particular matter and to grant them access to selected other party's data.
4. A data capture system as claimed in claim 1, claim 2 or claim 3, wherein the server comprises a database.
5. A data capture system as claimed in claim 4, wherein the database comprises a remote database.
6. A data capture system as claimed in any preceding claim, wherein the server is configured to allow data to be imported from an external database into a main database.
7. A data capture system as claimed in any of claims 4, 5 or 6, wherein the server is configured to provide hyperlinks between data sets in various databases.
8. A data capture system as claimed in any preceding claim, wherein the client computer comprises an application adapted to provide a graphical user interface.

9. A data capture system as claimed in claim 8, wherein the application comprises a stand-alone program.
10. A data capture system as claimed in claim 8, wherein the application comprises a web browser plugin.
11. A data capture system as claimed in claim 9 or claim 10, wherein the application is downloadable from a, or the, server via an internet connection.
12. A data capture system as claimed in any of claims 8 to 11, wherein the Graphical User Interface comprises lookup and drop-down input fields that auto-populate using historical data.
13. A data capture system as claimed in any of claims 8 to 11, wherein the Graphical User Interface comprises lookup and drop-down input fields that auto-populate using pre-stored date in one or more databases associated with the server.
14. A data capture system as claimed in any preceding claim, wherein the animation program is layer-based and is configured to allow a background scene to be overlaid by objects moving relative to features in the background scene.
15. A data capture system as claimed in claim 14, wherein the server's database comprises a set of pre-defined background scenes corresponding to different scenarios.
16. A data capture system as claimed in claim 14 or claim 15, wherein the server's database comprises a set of pre-configured objects that can be animated relative to the background scene.
17. A data capture system as claimed in claim 16, wherein at least one property of each object is user-configurable.
18. A data capture system as claimed in claim 17, wherein the user-configurable properties are selectable, in use, from lookup data stored in one or more of the server's databases.
19. A data capture system as claimed in any preceding claim, wherein the server and client computer are operatively interconnected such that the properties attributed to objects in the animation are stored in the database.

20. A data capture system as claimed in any preceding claim, wherein the web-accessible server comprises: a communications port accessible via an access protocol by the web-enabled client computer; the access protocol providing a security firewall and access control enabling only pre-authorised client computers to access the server; a central processing unit that interfaces with a data controller that controls the flow of data from one or more databases, located on the server, or remotely, a first one of the databases being configured to store data inputted by users of the system and to provide a central repository of information that can be shared between client computers according to the access controls.
21. A data capture system as claimed in claim 20, wherein the access protocol comprises a username and password login, or smart card access controls.
22. A data capture system as claimed in claim 20 or claim 21, wherein the database additionally comprises a client data store containing user information, which client store is configured to cross-reference individual users' credentials using identifiers.
23. A data capture system as claimed in claim 22, wherein the identifier comprises a file reference shared by two or more users.
24. A data capture system as claimed in any of claims 20 to 23, wherein a second one of the databases contains lookup information for populating fields in the main database.
25. A data capture system as claimed in claim 24, wherein the second one of the databases comprises address, contact and/or vehicle details.
26. A data capture system as claimed in any preceding claim, wherein the system is configured to use heuristics adapted to ignore minor discrepancies.
27. A data capture system as claimed in any preceding claim, wherein the system is configured to use heuristics adapted to identify pre-designated discrepancies.
28. A data capture system as claimed in claim 26 or claim 27, wherein the system is configured to analyse and rank the discrepancies to adduce matching score for identifying cases with significant differences.

29. A data capture system as claimed in claim 28 adapted output and transmit a report of significant differences.

30. A data capture system as claimed in any preceding claim, wherein the animation is rendered on the client computer using an application or plugin, based on the data points being locations of various objects relative to a standardised road layout, and object descriptions stored in a main database.

31. A data capture system as claimed in claim 30, wherein the animation adjustable on the client computer by updating the data points and object descriptions.

32. A data capture system as claimed in claim 30 or claim 31, wherein two or more animations are renderable simultaneously on the client computer, the two or more animations being based on multiple sets of data points and object descriptions provided by different users.

33. A data capture system as claimed in claim 32, further comprising an algorithm for subtracting one set of data points from another for objectively assessing the differences in different user's accounts of an incident.

34. A data capture system substantially as hereinbefore described, with reference to, and as illustrated in, the accompanying drawings.

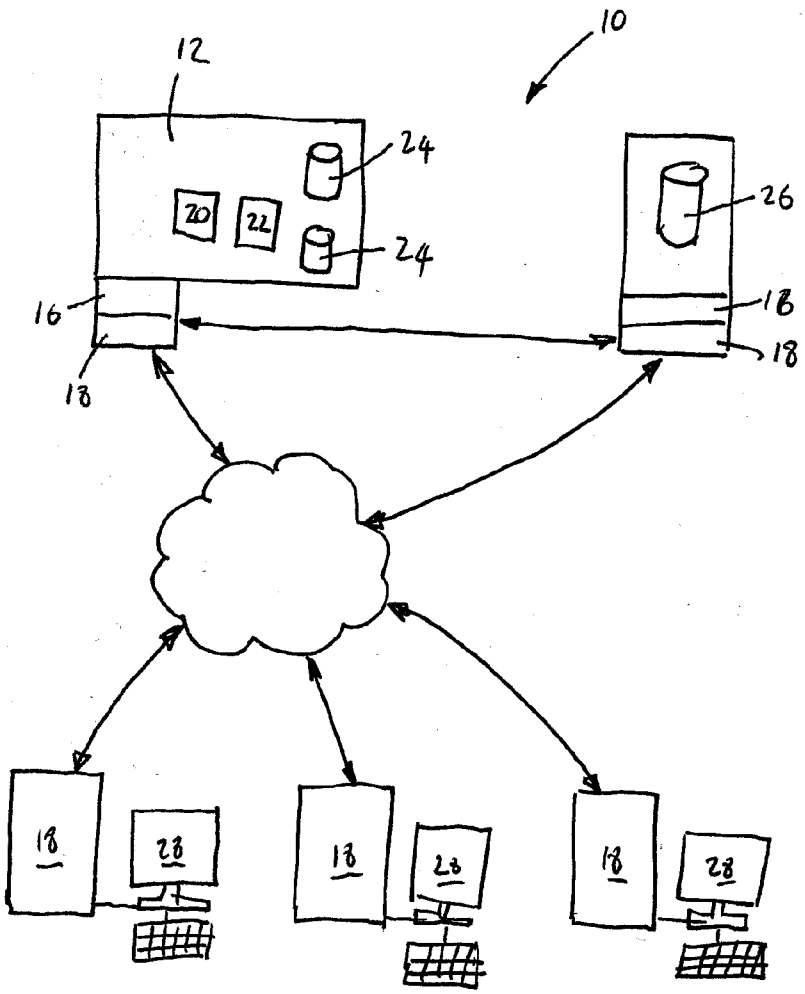

Figure 1

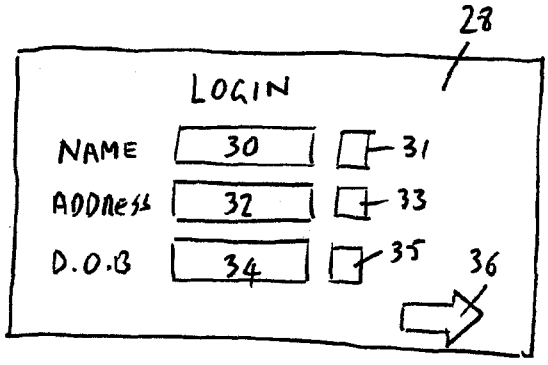

Figure 2

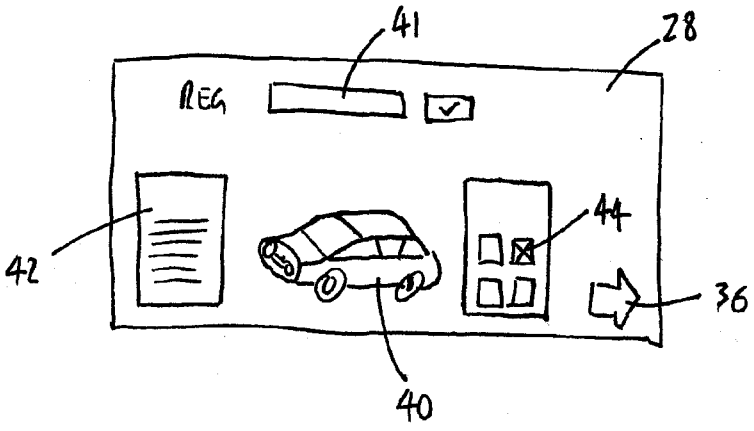

Figure 3

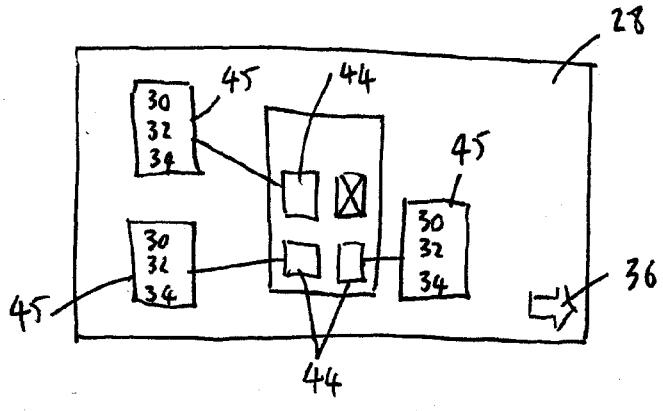

Figure 4

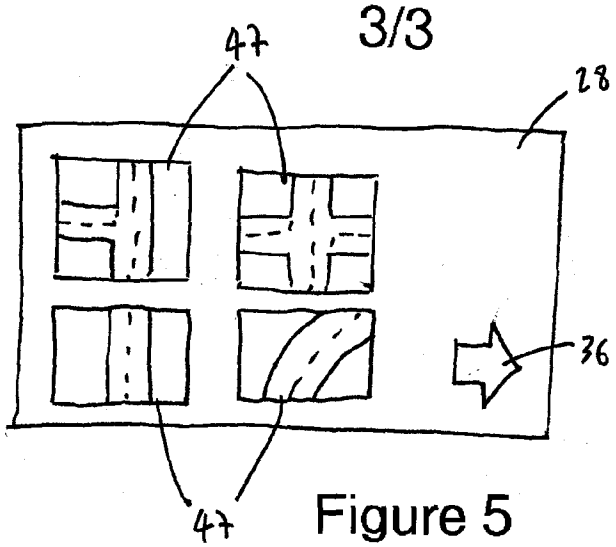

Figure 5

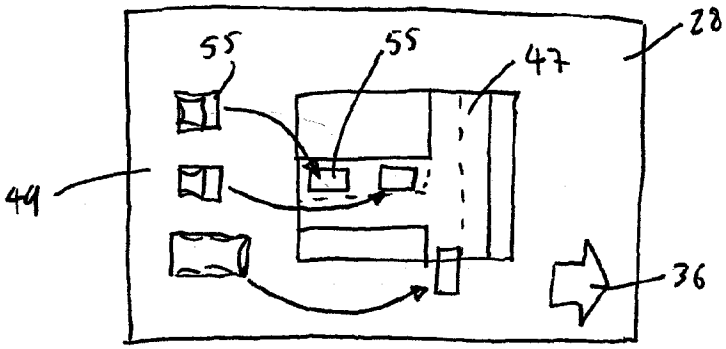

Figure 6

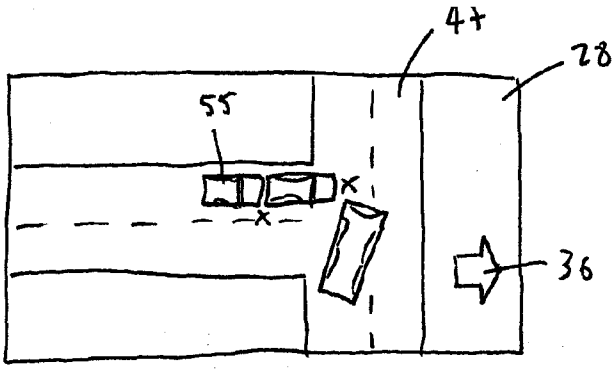

Figure 7

INTERNATIONAL SEARCH REPORT

International application No
PCT/GB2014/050947

A. CLASSIFICATION OF SUBJECT MATTER
INV. G06F17/30 G06F17/24 G06F19/00 G06Q10/10 G06T13/80
ADD.

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
G06F G06Q G06T H04L

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X Y A	US 2006/031103 A1 (HENRY DAVID S [US]) 9 February 2006 (2006-02-09) paragraph [0068] - paragraph [0074]; figures 1,2 paragraphs [0073] - [0082]; figures 3-6 paragraphs [0087] - [0098]; figures 10-15,18a,18b18c, 19	1,4-13, 26-31 2,3, 20-25 32-34
X	US 2010/256863 A1 (NIELSEN STEVEN [US] ET AL) 7 October 2010 (2010-10-07) paragraph [0166] - paragraph [0169]; figures 1-5 paragraphs [0132], [0141] paragraphs [0158] - [0165]; figures 4,13	1,14-19, 30-33

-/--

[X] Further documents are listed in the continuation of Box C.

[X] See patent family annex.

* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

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"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

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"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
3 July 2014	10/07/2014

Name and mailing address of the ISA/	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016	Bowler, Alyssa

INTERNATIONAL SEARCH REPORT

International application No
PCT/GB2014/050947

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 2004/030587 A1 (DANICO ANGELA G [US] ET AL) 12 February 2004 (2004-02-12) paragraphs [0011], [0122] paragraph [0127] - paragraph [0190]; figures 17-20	1-33
A	US 5 950 169 A (BORGHESI NANCY [US] ET AL) 7 September 1999 (1999-09-07) column 4, line 64 - column 10, line 56; figures 1-7	1-33
Y	US 5 987 611 A (FREUND GREGOR [US]) 16 November 1999 (1999-11-16) column 7, line 62 - column 14, line 22; figure 2 column 14, line 52 - column 16, line 34; figure 3a column 21, line 47 - column 22, line 34; figure 3b	2,3, 20-25

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No
PCT/GB2014/050947

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