

Looking at the logical data and the installation plans may increase the complexity of creating an installation plan, may increase the time required to develop an installation plan, and may increase the time required to review the installation plan. A three dimensional model, comprising modeling data, that describes the vehicle may also be developed to design the vehicle and plan for its manufacture. The three dimensional model of the design for the vehicle includes everything that is to be installed into the vehicle, including all of the connectors, harnesses, and equipment. For developing the installation plan, the three dimensional model is reduced to two dimensional paper schematics that are referenced when developing the installation plan. To develop the installation plan one must look to the logical data on a computer while also manually paging through the schematics on paper. This increases the complexity of and the time required for developing a quality installation plan. Therefore, it would be desirable to have a method and apparatus that takes into account at least some of the issues discussed above, as well as other possible issues.

SUMMARY

In one aspect, there is provided a method for displaying information about a group of harnesses, the method comprising: displaying, by a number of processors, logical data of a database, the logical data comprising a group of identifiers comprising a group of harness identifiers and a group of vehicle identifiers; wherein the logical data of the database is displayed in a logical data window of a navigation interface via a tabular view, the tabular view comprising a table displayed as a spreadsheet with a plurality of rows and a plurality of columns, the table comprising headers comprising identifiers from the group of identifiers, and the rows comprising data from the logical data; receiving a selected identifier of the group of identifiers; and displaying modeling data, the modeling data comprising a harness set related to a model of a vehicle that is associated with a vehicle identifier and is related to the selected identifier.

In another aspect, there is provided an apparatus that displays modeling data, the apparatus comprising: a display configured to display logical data of a database, the logical data comprising a group of identifiers comprising a group of harness identifiers and a group of vehicle identifiers; wherein the logical data of the database is displayed in a logical data window of a navigation interface via a tabular view, the tabular view comprising a table displayed as a spreadsheet with a plurality of rows and a plurality of columns, the table comprising headers comprising identifiers from the group of identifiers, and the rows comprising data from the logical data; and a processor configured to receive a selected identifier from the group of identifiers, wherein: the display is further configured to display modeling data, the modeling data comprising a harness set related to a model of a vehicle that is associated with a vehicle identifier and is related to the selected identifier.

In yet another aspect, there is provided a method for displaying information about a harness in a vehicle, the method comprising: identifying, by a number of processors, a group of harnesses in the vehicle; identifying logical data about the group of harnesses in the vehicle; identifying a placement of the group of harnesses in a model of the vehicle from the logical data; and displaying the group of harnesses in the vehicle in the placement identified on a display system; wherein the logical data is displayed in a logical data window of a navigation interface via a tabular view, the tabular view comprising a table displayed as a spreadsheet with a plurality of rows and a plurality of columns, the table comprising headers comprising identifiers from the group of identifiers, and the rows comprising data from the logical data.

In one embodiment, a method for displaying information about a group of harnesses is present. Logical data of a database comprising a group of identifiers comprising a group of harness identifiers and a group of vehicle identifiers is displayed. A selected identifier of the group of identifiers is received. Modeling data is displayed, the modeling data comprising a harness set related to a model of a vehicle that is associated with a vehicle identifier and is related to the selected identifier.

In another embodiment, an apparatus that displays modeling data is present. The apparatus comprises a display configured to display logical data of a database. The logical data comprises a group of identifiers comprising a group of harness identifiers and a group of vehicle identifiers. The apparatus further comprises a processor configured to receive a selected identifier from the group of identifiers. The display is further configured to display the modeling data, the modeling data comprising a harness set related to a model of a vehicle that is associated with a vehicle identifier and is related to the selected identifier.

CLAIMS:

1. A method for displaying information about a group of harnesses (342), the
5 method comprising:

displaying logical data (312) of a database (310), the logical data (312) comprising a group of identifiers (314) comprising a group of harness identifiers (368) and a group of vehicle identifiers (430);

receiving a selected identifier (328) of the group of identifiers (314); and

10 displaying modeling data (304), the modeling data (304) comprising a harness set (306) related to a model (302) of a vehicle (334) that is associated with a vehicle identifier (318) and is related to the selected identifier (328).

2. The method of claim 1, wherein:

15 the group of identifiers (314) further comprises a group of equipment identifiers (432), a group of connector identifiers (434), a group of zone identifiers (436), a group of vehicle identifiers (430), and a group of site identifiers (438).

3. The method of claim 1, further comprising:

20 receiving the logical data (312) from a server (104);

sending the selected identifier (328) to the server (104); and

receiving the modeling data (304) from the server (104) in response to sending the selected identifier (328).

25 4. The method of claim 1, wherein:

the modeling data (304) further comprises a zone set (308) of the modeling data (304) related to a group of zones (336) of the vehicle (334), each zone related to a zone identifier (324) of the group of identifiers (314).

30 5. The method of claim 1, further comprising:

receiving update data (330) related to the logical data (312) after the displaying of the modeling data (304); and

sending the update data (330) to the database (310) in response to receiving the update data (330).

6. The method of claim 5, wherein:

5 the update data (330) relates to an installation plan (348) that documents the installation of a harness (342) to an equipment (338) with a connector (340) in a zone (336) of a vehicle (334) at a site (332), and wherein:

the harness (342) is identified by a harness identifier (316) of the group of identifiers (314);

10 the equipment (338) is identified by an equipment identifier (320) of the group of identifiers (314);

the connector (340) is identified by a connector identifier (322) of the group of identifiers (314);

15 the zone (336) is identified by a zone identifier (324) of the group of identifiers (314);

the vehicle (334) is identified by a vehicle identifier (318) of the group of identifiers (314);

the site (332) is identified by a site identifier (326) of the group of identifiers (314); and

20 the selected identifier (328) is one of the harness identifier (316), the equipment identifier (320), the connector identifier (322), the zone identifier (324), the vehicle identifier (318), and the site identifier (326).

7. The method of claim 1, wherein displaying logical data (312) further comprises:

25 displaying the logical data (312) as a hierarchical tree indicative of relationships (354) between one of the group of identifiers (314) displayed on the hierarchical tree, and wherein:

the selected identifier (328) is selected from the hierarchical tree;

30 the hierarchical tree is one of a group of hierarchical trees, each hierarchical tree displaying a combination of the group of identifiers (314); and

the group of hierarchical trees comprises a site tree (352) comprising a group of site identifiers (438), a zone tree (358) comprising a group of zone identifiers (436), and a harness tree (364) comprising the group of harness identifiers (368).

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8. An apparatus that displays modeling data (304), the apparatus comprising:
a display (114) configured to display logical data (312) of a database (310), the logical data (312) comprising a group of identifiers (314) comprising a group of harness identifiers (368) and a group of vehicle identifiers (430); and

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a processor configured to receive a selected identifier (328) from the group of identifiers (314), wherein:

the display (114) is further configured to display modeling data (304), the modeling data (304) comprising a harness set (306) related to a model (302) of a vehicle (334) that is associated with a vehicle identifier (318) and is related to the selected identifier (328).

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9. The apparatus of claim 8, wherein:

the group of identifiers (314) further comprises a group of equipment identifiers (432), a group of connector identifiers (434), a group of zone identifiers (436),
a group of vehicle identifiers (430), and a group of site identifiers (438).

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10. The apparatus of claim 8, wherein:

the processor is further configured to receive the logical data (312) from a server (104);

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the processor is further configured to send the selected identifier (328) to the server (104); and

the processor is further configured to receive the modeling data (304) from the server (104) in response to sending the selected identifier (328).

11. The apparatus of claim 8, wherein:

the modeling data (304) further comprises a zone set (308) of the modeling data (304) related to a group of zones (336) of the vehicle (334), each zone related to a zone identifier (324) of the group of identifiers (314).

12. The apparatus of claim 8, wherein:

the processor is further configured to receive update data (330) related to the logical data (312) after displaying the modeling data (304); and

the processor is further configured to send the update data (330) to the database (310) in response to receiving the update data (330).

13. The apparatus of claim 12, wherein:

the update data (330) relates to an installation plan (348) that documents the installation of a harness (342) to an equipment (338) with a connector (340) in a zone (336) of the vehicle (334) at a site, and wherein:

the harness (342) is identified by a harness identifier (316) of the group of identifiers (314);

the equipment (338) is identified by an equipment identifier (320) of the group of identifiers (314);

the connector (340) is identified by a connector identifier (322) of the group of identifiers (314);

the zone (336) is identified by a zone identifier (324) of the group of identifiers (314);

the vehicle (334) is identified by a vehicle identifier (318) of the group of identifiers (314);

the site (332) is identified by a site identifier (326) of the group of identifiers (314); and

the selected identifier (328) is one of the harness identifier (316), the equipment identifier (320), the connector identifier (322), the zone identifier (324), the vehicle identifier (318), and the site identifier (326).

14. The apparatus of claim 8, wherein:

the display (114) is further configured to display the logical data (312) as a hierarchical tree indicative of relationships (354) between one of the group of identifiers
5 (314) displayed on the hierarchical tree, and wherein:

the selected identifier (328) is selected from the hierarchical tree;

the hierarchical tree is one of a plurality of hierarchical trees, wherein each hierarchical tree displays a combination of the group of identifiers (314); and

10 the plurality of the hierarchical trees comprises a site tree (352) comprising a plurality of site identifiers (438), a zone tree (358) comprising a plurality of zone identifiers (438), and a harness tree (364) comprising a plurality of harness identifiers (368).

What is claimed is:

1. A method for displaying information about a group of harnesses, the method comprising:

displaying, by a number of processors, logical data of a database, the logical data comprising a group of identifiers comprising a group of harness identifiers and a group of vehicle identifiers;

wherein the logical data of the database is displayed in a logical data window of a navigation interface via a tabular view, the tabular view comprising a table displayed as a spreadsheet with a plurality of rows and a plurality of columns, the table comprising headers comprising identifiers from the group of identifiers, and the rows comprising data from the logical data;

receiving a selected identifier of the group of identifiers; and

displaying modeling data, the modeling data comprising a harness set related to a model of a vehicle that is associated with a vehicle identifier and is related to the selected identifier.

2. The method of claim 1, wherein:

the group of identifiers further comprises a group of equipment identifiers, a group of connector identifiers, a group of zone identifiers, a group of vehicle identifiers, and a group of site identifiers.

3. The method of claim 1, further comprising:

receiving the logical data from a server;

sending the selected identifier to the server; and

receiving the modeling data from the server in response to sending the selected identifier.

4. The method of claim 1, wherein:

the modeling data further comprises a zone set of the modeling data related to a group of zones of the vehicle, each zone related to a zone identifier of the group of identifiers.

5. The method of claim 1, further comprising:

receiving update data related to the logical data after the displaying of the modeling data; and

sending the update data to the database in response to receiving the update data.

6. The method of claim 5, wherein:

the update data relates to an installation plan that documents the installation of a harness to an equipment with a connector in a zone of a vehicle at a site, and wherein:

the harness is identified by a harness identifier of the group of identifiers;

the equipment is identified by an equipment identifier of the group of identifiers;

the connector is identified by a connector identifier of the group of identifiers;

the zone is identified by a zone identifier of the group of identifiers;

the vehicle is identified by a vehicle identifier of the group of identifiers;

the site is identified by a site identifier of the group of identifiers; and

the selected identifier is one of the harness identifier, the equipment identifier, the connector identifier, the zone identifier, the vehicle identifier, and the site identifier.

7. The method of claim 1, wherein displaying logical data further comprises:

displaying the logical data as a hierarchical tree indicative of relationships between one of the group of identifiers displayed on the hierarchical tree, and wherein:

the selected identifier is selected from the hierarchical tree;

the hierarchical tree is one of a group of hierarchical trees, each hierarchical tree displaying a combination of the group of identifiers; and

the group of hierarchical trees comprises a site tree comprising a group of site identifiers, a zone tree comprising a group of zone identifiers, and a harness tree comprising the group of harness identifiers.

8. The method of claim 7, wherein the logical data of the database displayed as the hierarchical tree is displayed in a tree window of the navigation interface; and

wherein the modeling data is three dimensional and is displayed in a model window of the navigation interface.

9. The method of claim 1, wherein:

the harness identifier and the vehicle identifier each comprise a model number, a serial number, and a revision number;

the modeling data further comprises a zone set of the modeling data related to a group of zones of the vehicle, each zone related to a zone identifier of the group of identifiers; and

displaying logical data further comprises:

displaying the logical data as a hierarchical tree indicative of relationships between one of the group of identifiers displayed on the hierarchical tree, and wherein:

the selected identifier is selected from the hierarchical tree;

the hierarchical tree is one of a group of hierarchical trees, each hierarchical tree displaying a combination of the group of identifiers;

the group of hierarchical trees comprises a site tree comprising a group of site identifiers, a zone tree comprising a group of zone identifiers, and a harness tree comprising the group of harness identifiers;

the logical data of the database displayed as the hierarchical tree is displayed in a tree window of the navigation interface; and

the modeling data is three dimensional and is displayed in a model window of the navigation interface.

10. An apparatus that displays modeling data, the apparatus comprising:

a display configured to display logical data of a database, the logical data comprising a group of identifiers comprising a group of harness identifiers and a group of vehicle identifiers;

wherein the logical data of the database is displayed in a logical data window of a navigation interface via a tabular view, the tabular view comprising a table displayed as a spreadsheet with a plurality of rows and a plurality of columns, the table comprising headers comprising identifiers from the group of identifiers, and the rows comprising data from the logical data; and

a processor configured to receive a selected identifier from the group of identifiers, wherein:

the display is further configured to display modeling data, the modeling data comprising a harness set related to a model of a vehicle that is associated with a vehicle identifier and is related to the selected identifier.

11. The apparatus of claim 10, wherein:

the processor is further configured to receive the logical data from a server;

the processor is further configured to send the selected identifier to the server; and

the processor is further configured to receive the modeling data from the server in response to sending the selected identifier.

12. The apparatus of claim 10, wherein:
the modeling data further comprises a zone set of the modeling data related to a group of zones of the vehicle, each zone related to a zone identifier of the group of identifiers.
13. The apparatus of claim 10, wherein:
the processor is further configured to receive update data related to the logical data after displaying the modeling data; and
the processor is further configured to send the update data to the database in response to receiving the update data.
14. The apparatus of claim 12, wherein:
the update data relates to an installation plan that documents the installation of a harness to an equipment with a connector in a zone of the vehicle at a site, and wherein:
the harness is identified by a harness identifier of the group of identifiers;
the equipment is identified by an equipment identifier of the group of identifiers;
the connector is identified by a connector identifier of the group of identifiers;
the zone is identified by a zone identifier of the group of identifiers;
the vehicle is identified by a vehicle identifier of the group of identifiers;
the site is identified by a site identifier of the group of identifiers; and
the selected identifier is one of the harness identifier, the equipment identifier, the connector identifier, the zone identifier, the vehicle identifier, and the site identifier.
15. The apparatus of claim 10, wherein:
the display is further configured to display the logical data as a hierarchical tree indicative of relationships between one of the group of identifiers displayed on the hierarchical tree, and wherein:
the selected identifier is selected from the hierarchical tree;
the hierarchical tree is one of a plurality of hierarchical trees, wherein each hierarchical tree displays a combination of the group of identifiers; and
the plurality of the hierarchical trees comprises a site tree comprising a plurality of site identifiers, a zone tree comprising a plurality of zone identifiers, and a harness tree comprising a plurality of harness identifiers.
16. A method for displaying information about a harness in a vehicle, the method comprising:

identifying, by a number of processors, a group of harnesses in the vehicle;
identifying logical data about the group of harnesses in the vehicle;
identifying a placement of the group of harnesses in a model of the vehicle from the logical data; and
displaying the group of harnesses in the vehicle in the placement identified on a display system;
wherein the logical data is displayed in a logical data window of a navigation interface via a tabular view, the tabular view comprising a table displayed as a spreadsheet with a plurality of rows and a plurality of columns, the table comprising headers comprising identifiers from the group of identifiers, and the rows comprising data from the logical data.

17. The method of claim 16, wherein identifying the group of harnesses in the vehicle comprises:

receiving a selection of a group of criteria for the group of harnesses; and
identifying the group of harnesses using the group of criteria.

18. The method of claim 17, wherein the group of criteria is selected from a group of identifiers comprising a group of harness identifiers, a group of equipment identifiers, a group of connector identifiers, a group of zone identifiers, a group of vehicle identifiers, and a group of site identifiers.

19. The method of claim 16, wherein the logical data comprises data in a tabular form and wherein the data describes a group of equipment for the group of harnesses and locations of equipment in the vehicle.

20. The method of claim 16 further comprising:

displaying the navigation interface that includes the logical data window and a model window, wherein the group of harnesses in the vehicle in the placement identified is displayed in the logical data window and the model of the vehicle is displayed in the model window.

21. The method of claim 16, wherein displaying the group of harnesses in the vehicle in the placement identified on the display system comprises:

displaying a group of graphical identifiers in association with the group of harnesses.