(12)Indian Patent Application

_____

(72) Inventor(s):  WILSON, SUSAN
             AMIRTHARAJ, PRADEEP RAJA SAVARI
             VADDI, PRATAP KUMAR
             AJJAMPURA, MURALIDHARA NAGARAJA SRESHTY

(54) Title: A SYSTEM AND METHOD FOR SELECTING COMPATIBLE ELECTRONIC COMPONENTS FOR A CIRCUIT

(57) Abstract: According to embodiments of the invention, a system (100) and method for selecting one or more compatible electronic components for an electronic circuit from an electronic hardware component database (102) is disclosed. The disclosed system (100) includes an input module (104) for defining the circuit requirements including physical conditions and electrical characteristics and a processor (106) for identifying one or more components from the list of the electronic components based on inputs provided in the input module (104). The system (100) further includes a line diagram module (118) for developing a single line diagram of the final circuit with identified electronic components.
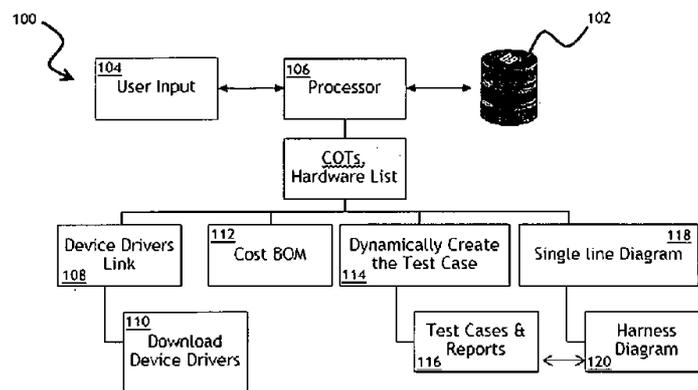


Figure 1

# A SYSTEM AND METHOD FOR SELECTING COMPATIBLE ELECTRONIC COMPONENTS FOR A CIRCUIT

## ABSTRACT

According to embodiments of the invention, a system (100) and method for selecting one or more compatible electronic components for an electronic circuit from an electronic hardware component database (102) is disclosed. The disclosed system (100) includes an input module (104) for defining the circuit requirements including physical conditions and electrical characteristics and a processor (106) for identifying one or more components from the list of the electronic components based on inputs provided in the input module (104). The system (100) further includes a line diagram module (118) for developing a single line diagram of the final circuit with identified electronic components.
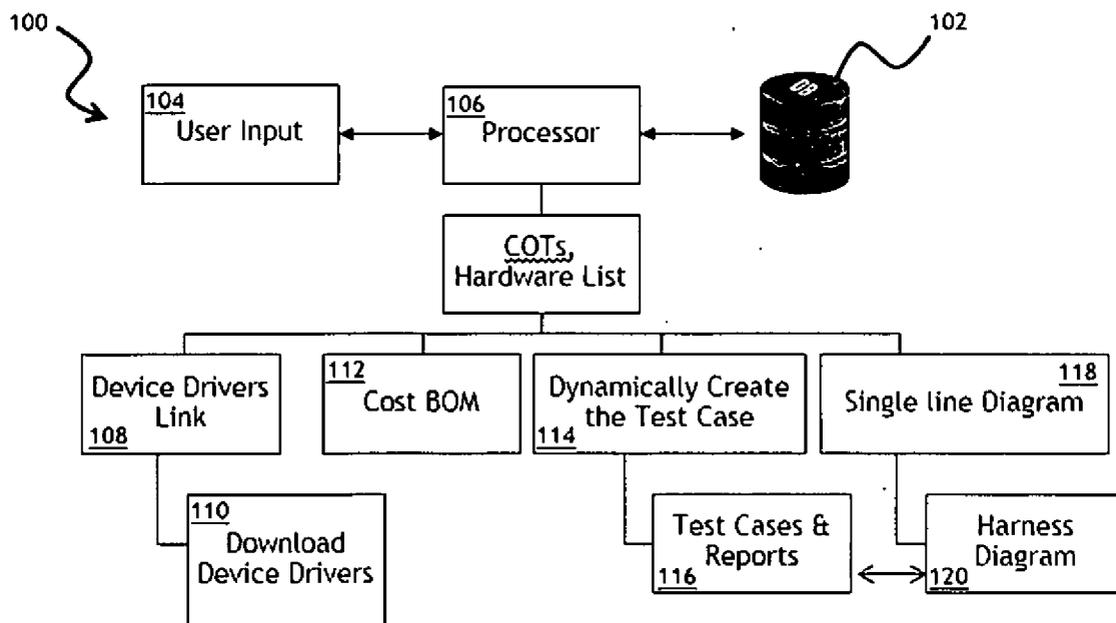
We claim:

1. A system (100) for selecting one or more compatible electronic components for an electronic circuit from an electronic hardware component database (102), the system (100) comprises:

an input module (104) for defining the circuit requirements including physical conditions and electrical characteristics;

a processor (106) for identifying one or more components from the list of electronic hardware component database (102) based on inputs provided in the input module (104); and

a line diagram module (118) for developing a single line diagram of the final circuit with identified electronic components.

2. The system (100) as claimed in claim 1, wherein the database (102) is be developed and maintained by a user.

3. The system (100) as claimed in claim 1, wherein the database (102) generates electronic hardware component by a computing device automatically from internet.

4. The system (100) as claimed in claim 1, wherein the electronic components are commercially available off-the-shelf (COTS) hardware components.

5. The system (100) as claimed in claim 4, wherein, the database includes information on COTS configuration, cost and device driver links.

6. The system (100) as claimed in claim 1, wherein the input module (104) have one or more pre-configured sub modules for collecting required technical information from the user.

7. The system (100) as claimed in claim 4, further comprises a module (108) for identifying drivers for the selected COT component.

7

8. The system (100) as claimed in claim 1, further comprises a Bill of Material (BOM) module (112) for automatically creating a Bill of Material List.

9. The system (100) as claimed in claim 4, further comprises a test case module (114) for generating test cases automatically for selected COT components and circuit design.

10. The system (100) as claimed in claim 1, further comprises a harness module (120) for designing and generating a harness diagram from the selected COT hardware components.

Dated this 30th day of March 2017

Mohammed Faisal (INPA No: 1941)
Head, IPR Dept.
L&T Technology Services Limited
DLF 3rd Block, 2nd Floor,
Manapakkam, Chennai, TN, 600089

FIELD OF INVENTION

The invention generally relates to a system and method for identifying and selecting one or more electronic components for a circuit from a component database.

BACKGROUND

A typical designing process involves at least one designer/engineer to draws up specifications for the required electronic circuit. The specifications for the circuit include physical conditions and electrical characteristics. The designer/engineers while designing electronic circuits have numerous options to select off the shelfs readily available electronic components based on identified various physical conditions / electrical characteristics and cost. At times, selection of most optimal component is a challenge, considering the numerous options and combinations available based on identified physical conditions and electrical characteristics. This substantially increases the designing time. Moreover, the designer may overlook a most optimal component for circuit, since manual identification is a tedious and time-consuming task.

Hence there is a need for a system and method for identifying and automatically selecting a compatible set of electronic components for a circuit from a hardware component database.

SUMMARY OF THE INVENTION

According to embodiments of the invention, a system and method for selecting one or more compatible electronic components for an electronic circuit from an electronic hardware component database is disclosed. The disclosed system includes a database of the electronic

2

component, an input module for defining the circuit requirements including physical conditions and electrical characteristics and a processor for identifying one or more components from the list of the electronic components based on inputs provided in the input module. The system further includes modules for developing a single line diagram of the final circuit with identified electronic components and dynamically creating test cases for the designed circuit.

## BRIEF DESCRIPTION OF DRAWINGS

Other objects, features, and advantages of the invention will be apparent from the following description when read with reference to the accompanying drawing.

Figure 1 illustrates an exemplary system for selecting one or more compatible electronic components for an electronic circuit according to embodiments of the invention.

## DETAILED DESCRIPTION OF DRAWINGS

The following description with reference to the accompanying drawing is provided to assist in a comprehensive understanding of exemplary embodiments. It includes various specific details to assist in that understanding but these are to be regarded as merely exemplary. Accordingly, those of ordinary skill in the art will recognize that various changes and modifications of the embodiments described herein can be made without departing from the scope and spirit of the invention. In addition, descriptions of well-known functions and constructions are omitted for clarity and conciseness.

According to embodiments of the invention, a system 100 for selecting one or more compatible electronic components for an electronic circuit is disclosed. The disclosed system includes a database 102 of the electronic component. The database 102 may be developed and maintained by a user and may contain an exhaustive list of plurality of electronic component. According to another embodiment, the list may be generated by computing device automatically from internet. According to yet another embodiment, the electronic component may be commercially available off-the-shelf (COTS) hardware components. The database may further include information on COTS configuration, cost, device driver links etc.

The system 100 may further includes an input module 104 for receiving and defining the circuit requirements from a user. The input module 104 may request user to provide circuit related technical information including physical conditions and electrical characteristics. According to an embodiment, the input module 104 may be a Graphic User Interface (GUI). The input module 104 may have one or more pre-configured sub modules for collecting required technical information from the user.

The system further includes a processor 106. According to an embodiment, the processor 106 may be in communication with database 102. The processor 106 may be configured to identifying one or more components from the list of the electronic components from the database 102 based on the inputs provided by a user through the input module 104. According to embodiments of the invention, the selected component may be based on configuration, compatibility and cost of the component. The user may simply specify technical requirement through the input module 104. On receiving request, the processor 106

4

components from the database 102. According to an embodiment, if no compatible hardware COT component is available in database, the processor may instigate a web based search to identify list of compatible components. Once the list of all compatible component is prepared, a ranking is provided to all identified components. According to an embodiment, the ranking may be based on compatibility and cost of the components. The component with highest ranking may be identified and selected for designing the circuit.

According to yet another amendment the system 100 may have a module 108 for identifying drivers for the selected COT component. The module 108 may also configured to download required driver using driver download module 110, so that user may readily use selected COT components. The system 100 may further includes a Bill of Material (BOM) module 112. The BOM module may be configured to automatically create and configure a Bill of Material List. According to an embodiment, the BOM module 112 may also include cost information for each selected COT component. The system may also include a test case module 114. The test case module 114 may generate test cases automatically for selected COT components and circuit design. According to yet another embodiment, the system 100 may further have a test cases and report module 116 for developing and storing test cases and test case reports. The system 100 may further includes a line diagram module 118 for designing and generating a single line diagram (SLD) using identified component based on user inputs. The system may also include a harness module 120 for designing and generating a harness diagram using selected COT hardware components. According to embodiment of the invention, the line diagram module 118 and harness module 120 may enable the user of have a design ready out based on information provided through the input module 104.

According to yet another embodiment, a method for selecting one or more compatible electronic components for an electronic circuit from an electronic hardware component database (102) is disclosed. The disclosed method includes receiving an input from a user for defining the circuit requirements including physical conditions and electrical characteristics, automatically initiating an identification process for identifying one or more components from the list of electronic hardware component database (102) based on inputs provided by the user and generating a line diagram of the final circuit with identified electronic components.

According to embodiment of the present invention, the disclosed invention may help users to substantial cut down the COTs selection time.

It is understood that the above description is intended to be illustrative, and not restrictive. It is intended to cover all alternatives, modifications and equivalents as may be included within the spirit and scope of the invention as defined in the appended claims. Many other embodiments will be apparent to those of skill in the art upon reviewing the above description. The scope of the invention should, therefore, be determined with reference to the appended claims, along with the full scope of equivalents to which such claims are entitled. In the appended claims, the terms "including" and "in which" are used as the plain-English equivalents of the respective terms "comprising" and "wherein," respectively.
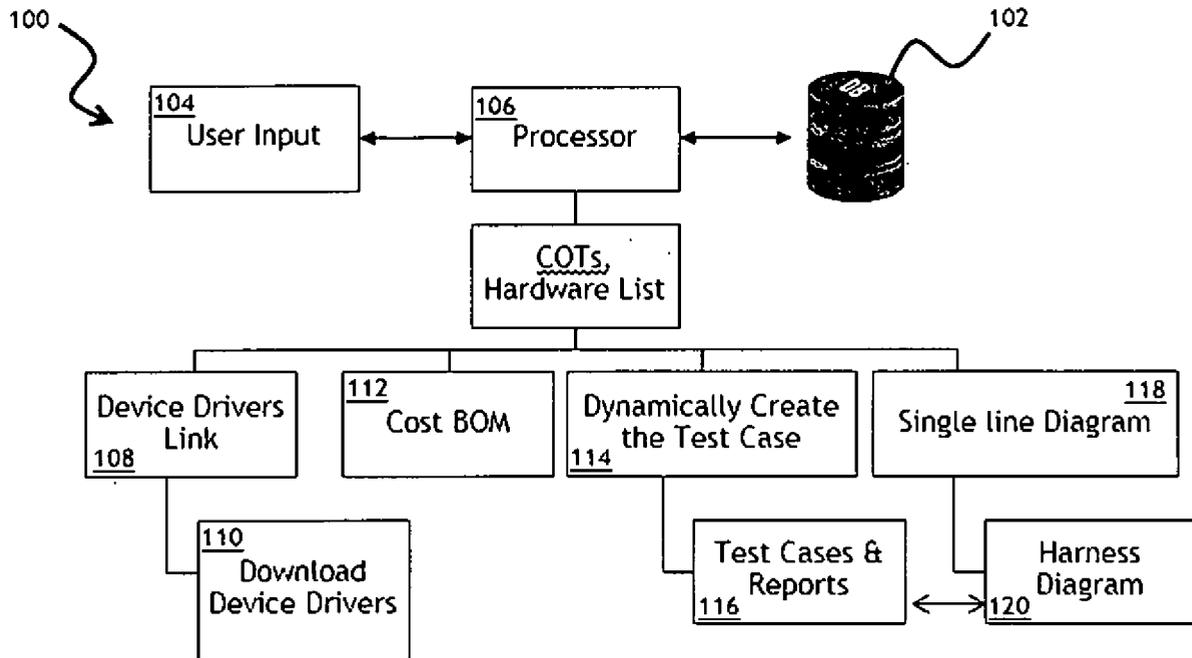
Figure 1

Mohammed Faisal (INPA No: 1941)
Head, IPR Dept.
L&T Technology Services Limited
DLF 3rd Block, 2nd floor,
Manapakkam, Chennai – 600089