

Holster Harness For Wearable Computing

The present application relates to a wearable computing device. In particular, the application relates to a wearable harness
5 for carrying a computing device.

Wearable computing has been studied for about the past 30 years. Many inventions have been recorded in this field. The wearable computing includes off-the-shelf computing devices
10 packaged into compact units that are mounted either on backpacks or on durable jackets. The wearable computing may have components, such as antenna and batteries.

US 5,774,338 discloses a body integral electronics package
15 housing that is formed of cloth material. The package housing looks like a person's garment, such as a poncho or vest. The housing contains various pockets to enclose various electronic modules. These pockets include a front pocket with a size to overlie breast and midriff portions of the torso of a user.
20 The front pocket confines a plurality of rigid electronic modules that are supported within the pocket in a row and column array. The user may twist or turn his torso and bend forward or back while the foregoing array and the modules do not restrict this movement. Instead, the position of the individual
25 modules independently adjusts to the position of the torso.

US 6,443,347 discloses a personal harness for a wearable computer on the body of a user. The personal harness has a waist belt and a shoulder sling that are integrally formed with each
30 other. The waist belt is inelastic and forms a belt around the waist of the user. The waist belt has a strap with hook-and-loop fasteners for adjusting the circumference of the waist belt. The shoulder sling is draped over one shoulder of the user and has front and rear sashes with primary and secondary

compartments, respectively. The primary compartment has a zipper along one side edge and a sealable flap at an upper end for containing wearable computer hardware. The secondary compartment also has a sealable flap at an upper end for supporting telecommunications equipment for the computer on the body of the user. In addition, both compartments have mesh windows for ventilating the equipment.

The objective of this application is to provide an improved wearable computing device.

It is believed that the wearable computing device can be improved by providing computing capabilities with a form factor that provides mobility for its user.

The application provides a method for performing one or more functions of maintenance, repair, and overhaul (MRO) for a vehicle. The vehicle serves to transport goods and humans. Examples of the vehicle include an aircraft and a car.

The method comprises a step of providing or of placing a portable computing device in a body garment. The body garment has at least one upper small component and two lower larger components, wherein these components serve to hold modules of the portable computing device. Referring to the computing device, it has at least one upper computing module and two lower computing modules. These computing modules serve to store data and to change the data according to instructions of a software programs.

Specifically, the above step of placing of the computing device includes a step of providing the upper computing module in the upper small component. The said step of placing also

includes a step of providing the two lower computing modules in the two corresponding lower larger components.

This method also includes a step of wearing the body garment on a human body. Different from other methods, the step of wearing includes placing the upper computing module next to an upper chest portion of the human body, and includes placing the lower computing module next to a waist side portion of the human body. One lower computing module is placed next to a left waist side portion of the human body while another lower computing module is placed next to a right waist side portion of the human body. In short, the lower computing modules are not placed next to the front part of the human body. Instead, the lower computing modules are placed symmetrically around the human body.

The way of wearing the body garment has a benefit of evenly distributing the weight of the computing device about the human body. In addition, the body garment does not block the front areas of the human body. This is especially useful when the human body lying horizontally for moving underneath a part of the vehicle.

The method often includes a step of the human body with the body garment sliding below a part of the vehicle although the body garment also allows the human to take up other positions or postures comfortably.

The application also provides a wearable computing device. The computing device includes a body garment, a portable computing device being installed or being placed in the body garment, and a human body wearing the body garment.

The body garment comprises at least one upper small component, and two lower larger components. The upper small component often includes a shoulder strap while the lower larger components often include side waist pouches.

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In particular, the upper small component has an upper computing module compartment for holding a module of the computing device. Similarly, the two lower larger components have two corresponding lower computing module compartments for holding corresponding modules of the computing device.

The body garment also has a connecting portion and a fastening device. The connecting portion is connected to the upper small component and to the two lower larger components by sewing or by other attachment means, such as glue.

The fastening device is connected to the two lower larger components for securing the lower larger components to the human body of a user. Similarly, the upper small component may also have a fastening device for securing the upper small component to the user human body.

Referring to the portable computing device, it includes at least one upper computing module and two lower computing modules. The upper computing module is provided in the upper computing module compartment of the body garment. Similarly, the two lower computing modules are provided in the two corresponding lower computing module compartments of the body garment.

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When the human body wears the body garment, the upper computing module compartment is placed next to an upper chest portion of the human body. The lower computing module compartment is placed next to a waist side portion of the human body. One

lower computing module compartment is placed next to a right waist side portion of the human body while another lower computing module compartment is placed next to a left waist side portion of the human body.

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In other words, the lower computing module compartments together with the lower computing modules are placed symmetrically about the human body. The lower computing module compartments are also not placed in front of the human body.

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The body garment allows the user wearing the body garment to carry the portable computing device comfortably. The body garment remains comfortable even when the body of the user is pressed against a firm surface, like lying on the floor. The hands of the user are also not required to carry the computing device, thus allowing the hands to use the portable computer device and to perform other tasks, as needed. This is especially important in aircraft maintenance, where maintenance staff sometimes adopt certain horizontal postures, which does not permit easy use of other computing equipment, such as Personal Digital Assistant (PDA).

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The application also provides a further wearable computing device. The computing device has a body garment and a portable computing device.

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The body garment includes at least one upper small component, two lower larger components, a connecting portion, and a fastening device.

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In particular, the upper small component includes an upper computing module compartment for being placed next to an upper chest portion of a human body. Similarly, the two lower larger components includes two corresponding lower computing module

compartments that are intended for placing next to corresponding waist side portions of the human body. One lower computing module compartment is intended for placed next to the left waist side portion of the human body while another lower computing module compartment is intended for placed next to the right waist side portion of the human body.

The connecting portion is connected to the upper small component and to the two lower larger components by sewing or by other connection means. The fastening device is connected to the two lower larger components.

Referring to the portable computing device, it includes at least one upper computing module and two lower computing modules. The upper computing module is provided or is placed in the upper computing module compartment while the two lower computing modules are provided or are placed in the corresponding two lower computing module compartments.

Referring to the above two computing devices, one or more channels are often embedded in fabric layers of the at least one upper small component and in fabric layers of the lower larger components. These channels enclose at least one electrical conductor or wire, wherein the electrical conductor is connected to the lower computing module, to the two upper computing modules, or to both the lower computing module and the two upper computing modules. Each channel provides a passageway for easy placement of different type of conductive electrical conductors for transmitting electrical signals or electrical power between the computing modules.

In a general sense, the fabric layers can include a fine-mesh netting material that has a bright colour for easy recognition for safety purposes. The fabric layers can also comprises a

- reflective material that provides a heat dispersing function. Alternatively, the fabric layers can also include a thick and fluffy material or even a foam material for providing cushioning and comfort. The channel can enclose a cable can be used
- 5 to couple mechanically the different modules. The electrical conductor can have different shapes. The electrical conductor can have a thin and flat shape, which can be woven into the fabric layers.
- 10 Each of the upper computing module compartment and the lower computing module compartment can also include an opening that is connected to the channel. This allows the electrical conductor in the channel to connect to the computing modules.
- 15 In one aspect of the application, the channel encloses an antenna. Since the channel extends between the computing modules, the channel often allows the antenna to have good reception of signals.
- 20 Different implementations of the fastening device are possible. In one implementation, the fastening device has at least one strap with at least one fastener. One end of the strap is attached to one lower larger component while the fastener is attached to another lower larger component. In another implemen-
- 25 tation, the fastening device has at least one belt fastener with one or more belt loops. The belt fastener passes through the belt loops while the belt fastener acts to pull one lower larger component towards another lower larger component.
- 30 The weight of the two lower computing modules is often similar. This allows the computing device to load the spine of the user essentially in an even manner.

In one aspect of the application, the weights of the lower computing modules are similar within a tolerance of 10%. In another aspect of the application, the weights of the lower computing modules are similar within a tolerance of 20%.

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The upper computing module together with the lower computing modules can include a processor module, a memory storage module, a battery module, and a battery controller module for performing the said functions of the computing device.

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The application also provides a body garment for a wearable computing device.

The body garment includes one or more upper small components and two lower larger components. In particular, the upper small component includes an upper computing module compartment for placing next to an upper chest portion of a human body. The upper computing module compartment is intended to hold an upper computing module of a portable computing device. Similarly, the two lower larger components include two corresponding lower computing module compartments for placing next to two corresponding waist side portions of the human body, which are namely the left waist side portion and the right waist side portion. The lower computing module compartment is intended to hold a lower computing module of the portable computing device.

The body garment also includes a connecting portion and a fastening device. The connecting portion is connected to the one or more upper small components and to the two lower larger components. The fastening device is connected to the two lower larger components.

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The body garment often includes one or more channels, which are embedded in fabric layers of the at least one upper small component and in fabric layers of the lower larger components. Each channel encloses one or more electrical conductors,

5 wherein each electrical conductor is provided for connecting to the lower computing module, to the upper computing module, or to both the lower computing module and the upper computing module of the computing device.

10 Each of the upper computing module compartment and the lower computing module compartment can comprise one or more openings. The opening is connected to one of the above-mentioned channel.

The channel can also enclose an antenna.

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Different ways of implementing the fastening device are possible. The fastening device can comprise one or more straps with one or more fasteners. Alternatively, the fastening device can also comprise one or more belt fasteners with one or more belt
20 loops.

Fig. 1 illustrates a holster garment,

Fig. 2 illustrates the main harness design of the holster garment of Fig. 1,

25 Fig. 3 illustrates the outer side of the holster garment of Fig. 1,

Fig. 4 illustrates the inner side of the holster garment of Fig. 1,

Fig. 5 illustrates layers of fabric of the holster garment of Fig. 1 together with an embedded channel,
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Fig. 6 illustrates the holster garment of Fig. 1 being fitted with a computing device,

Fig. 7 illustrates a user in a lying down position while wearing the holster garment of Fig. 1, and

Fig. 8 illustrates a further holster garment with a belt system.

In the following description, details are provided to describe the embodiments of the application. It shall be apparent to one skilled in the art, however, that the embodiments may be practiced without such details.

The figures below have similar parts. The similar parts have same names or same part numbers. The description of the similar parts is hereby incorporated by reference, where appropriate, thereby reducing repetition of text without limiting the disclosure.

Fig. 1 shows a holster garment 10 with four module compartments while Fig. 2 shows the main harness of the holster garment 10.

As seen in Fig. 2, the holster garment 10 includes two wing portions 20a and 20b and two corresponding elongated shoulder straps 21a and 21b with two corresponding elongated shoulder adjustment straps 25a and 25b. The wing portions 20a and 20b, the shoulder straps 21a and 21b, as well as the shoulder adjustment straps 25a and 25b are joined into a small body 22 to form a single piece.

The wing portion 20a includes a major module compartment 30a while the wing portion 20b includes a major module compartment 30b. The shoulder strap 21a includes a minor module compartment 31a while the shoulder strap 21b includes a minor module compartment 31b.

In particular, first end portions of the shoulder straps 21a and 21b and first end portions of the shoulder adjustment

straps 25a and 25b are attached to the small body 22. A second end portion of the shoulder strap 21a and a second end portion of the shoulder adjustment strap 25a are attached to a first strap buckle. Similarly, a second end portion of the shoulder strap 21b and a second end portion of the shoulder adjustment strap 25b are attached to a second strap buckle.

The holster garment 10 also includes a set of two front waist straps 26a and 26b with a front waist buckle and a set of two rear waist straps 27a and 27b with a rear waist buckle. The front waist straps 26a and 26b together with the rear waist straps 27a and 27b are attached to the wing portions 20a and 20b.

A first end portion of the front waist strap 26a is attached to the wing portion 20a by sewing while a first end portion of the front waist strap 26b is attached to the wing portion 20b by sewing. A second end portion of the front waist strap 26a and a second end portion of the front waist strap 26b are attached to the front waist buckle. Similarly, a first end portion of the rear waist strap 27a is attached the wing portion 20b by sewing while a first end portion of the rear waist straps 27b is attached to the wing portion 20a by sewing. A second end portion of the rear waist strap 27a and a second end portion of the rear waist straps 27b are attached to the rear waist buckle.

As seen in Fig. 3, outer portions of the shoulder straps 21a and 21b are overlaid respectively with pieces 50a and 50b of fabrics. Inner portions of the fabric pieces 50a and 50b are sewn respectively on the front of the shoulder straps 21a and 21b. Outer portions of the fabric pieces 50a and 50b are folded into the back of the shoulder straps 21a and 21b to cover the shoulder straps 21a and 21b, as shown in Fig. 6.

The outer parts of the fabric pieces 50a and 50b and the corresponding parts of the shoulder straps 21a and 21b are lined or covered with fabric hook-and-loop fasteners to hold the
5 fabric pieces 50a and 50b in place after folding.

Each hook and loop fastener comprises a hook component and a loop component. The hook component has a plurality of tiny hooks while the loop component has a plurality of correspond-
10 ing loops. When these two components are pressed together, the hooks are caught in the loops such that the two components are fastened or bound together. The two components can be separated later by peeling the two components apart.

15 One component of the hook and loop fastener is attached to the fabric piece 50a or 50b by sewing. Similarly, the other component of the hook and loop fastener is attached to the corresponding shoulder strap 21a or 21b by sewing.

20 In a general sense, the sewing can be replaced by applying an adhesive substance. In addition, the hook and loop fastener can also be replaced with other fastening mechanism, such as buttons and zipper.

25 The fabric pieces 50a and 50b also has channel openings 51a and 51b respectively. Similarly, the wing portions 20a and 20b also have channel openings 52a and 52b. These channel openings 51a, 51b, 52a, and 52b enclose ends of electrical wires, which interconnect among the openings 51a, 51b, 52a, or 52b while
30 these electrical wires are embedded in the holster garment 10.

Two fixed loops 70a and 70b are attached respectively to bottom parts of the wing portions 20a and 20b.

Two button flaps 71a and 71b are also attached to the end of the corresponding shoulder straps 21a and 21b.

As seen Fig. 4, channel access openings 80a and 80b are placed
5 respectively at sides of the shoulder straps 21a and 21b.

Channel access openings 80c and 80d are placed respectively at the sides of the wing portions 20a and 20b. The channel access openings 80a, 80b, 80c, and 80d are covered by hook-and-loop fasteners.

10 Plate openings 81a and 81b are placed respectively on the inner side of the wing portions 20a and 20b.

As seen in Fig. 5, the holster garment 10 is made with several
15 layers of fabrics, namely layers 40, 41, 42, and 43. The layer 41 is placed between the layers 40 and 42 while the layer 42 is placed between the layers 41 and 43.

The layer 40 is placed at the outermost portion of the holster
20 garment 10 and it comprises a fine-mesh netting material that has a bright colour. The layer 41 comprises a reflective material that provides a heat dispersing function. The two layers 40 and 41 together provide good visibility to the user of the holster garment 10, and also heat dissipation for various com-
25 ponents of a computing device. The layer 42 comprises a thick and fluffy material, or even a foam material for providing cushioning and heat insulation. The layer 43 comprises a soft fabric for providing better comfort. The layers 41 and layer 42 enclose one or more embedded channels 44, wherein each
30 channel 44 houses one or more electrical conductors or wires 45. The conductors 45 have a thin and flat shape, like a flexible cable, or a thread like shape, which can be woven into the fabric.

In a general sense, the number of layers and the types of fabric selected for producing the holster garment 10 is dependent on its application and its safety requirements. More than one channel can be embedded in between these layers. More layers
5 can also provide better separation between different conductors of different channels and thereby reducing the noise interference between the channels. The fabric material between the embedded channels can be chosen to reduce further signal interference.

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In a general sense, the channels run throughout the holster garment 10 and can be used to not only embed conductors. Other forms of connection, such as a cable, can be used to couple different components mechanically. Under certain circumstances,
15 it may also be appropriate to insert extra support, or protective materials, or inflatable pads in between the layers to provide better fitting, comfort, and safety to the user of the holster garment 10.

20 Extra netting material can be included to create external channels on the exterior of the holster garment 10 for guiding and holding channels of additional accessories.

When wore by a user, the wing portions 20a and 20b are positioned at the side waists of the user. In particular, the wing
25 portion 20a is positioned at the left user side waist while the wing portion 20b is positioned at the right user side waist. Similarly, the shoulder strap 21a is positioned at the left upper chest part of the user. The shoulder strap 21b is
30 positioned at the right upper chest part of the user.

In use, the holster garment 10 is intended for carrying a computing device with various modules or components. In particu-

lar, the compartments 30a, 30b, 31a, and 31b carry the various modules of the computing device.

The various modules are connected to the electrical conductors 45, which electrically connect together these modules. The electrical conductors 45 are inserted by the openings 51a, 51b, 52a, and 52b while the channel access openings 80a, 80b, 80c, and 80d facilitate the insertion of these conductors 45.

The various modules are also attached to the wing portions 20a and 20b and to the shoulder straps 21a and 21b.

In a general sense, the computing device can include a main module with a computational module, a memory and battery controller, an accessory module, and two battery modules.

Different implementations of the computing device are possible.

In one implementation, the computing device includes a main computation module with a major accessory module and a battery module together with a battery-controller module, as shown in Figs. 2 and 6.

The main computation module is attached to the major module compartment 30a of the wing portion 20a while the major accessory module is attached to the major module compartment 30b of the wing portion 20b.

The main computation module is also connected electrically to the conductor 45 in the opening 52a of the module compartment 30a. The connection is done such that the conductor 45 is not exposed. Similarly, the major accessory module is connected electrically to the conductor 45 in the opening 52b of the

module compartment 30b. The connection is also done such that the conductor 45 is not exposed.

The battery module is attached physically to the minor module compartment 31a of the shoulder strap 21a via the fabric piece 50a, instead of attaching directly onto the shoulder strap 21a, for allowing the back-plate of the battery module to be padded by the shoulder strap 21a.

Similarly, the battery-controller module is attached physically to the minor module compartment 31b of the shoulder strap 21b via the fabric piece 50b, instead of attaching directly onto the shoulder strap 21b, for allowing the back-plate of the battery-controller module to be padded by the shoulder strap 21b.

The battery module is also connected electrically to the conductor 45 in the opening 51a. The battery-controller module is connected electrically to another conductor 45 in the opening 51b. Both connections are done such that the conductors 45 are not exposed.

The plate openings 81a and 81b allows insertion of back mounting plate for attaching to the modules of the computing device via screws, which are inserted through the screw holes 82 on the inner side of the garment 10.

The computing device also includes user ports, such as Universal Serial Bus (USB) ports, which placed in openings 53 that are located at appropriate positions on the holster garment 10, such as a part of the wing portions 20a and 20a or parts of the shoulder straps 21a and 21b. The user ports are connected to main computation module via conductors that are embedded in the holster garment 10.

The computing device can also include an external channel network 60 that comprises external channels 61 and 62. These external channels 61 and 62 extend on over the wing portions 20a and 20b.

When the holster garment 10 is worn by a user, the shoulder straps 21a and 21b goes over both shoulders of the user for connecting to the shoulder adjustment straps 25a and 25b via the buckles to hold the shoulder straps 21a and 21b in place.

The front waist straps 26a and 26b are connected together via the front waist buckle and the rear waist straps 27a and 27b are connected together via the rear waist buckle to hold the two wing portions 20a and 20b close against the body of the user. These connections prevent the two wings portions 20a and 20b from interfering with the movement of the user.

The wing portions 20a and 20b are usually positioned at the back of the body of the user. By adjusting the length of the front waist straps 26a and 26b and the length of the rear waist straps 27a and 27b, the wing portions 20a and 20b can be shifted from the back to the side of the body of the user.

The two fixed loops 70a and 70b are used to hold additional accessories.

In short, the holster garment 10 allows carrying of a computing device on the body of a user, thereby transforming the computing device into a compact wearable computer. The one-piece design of holster garment 10 is simple to use. The user can put on the garment 10 easily, and can secure it properly onto the body with the adjustable shoulder straps 21a or 21b and with the waist straps 26a and 26b as well as with the

waist straps 27a and 27b, like a harness. Another advantage of the one-piece design is that the various interconnections of the computing device, such as signal and power wires, can be embedded between or within the fabrics of the holster garment

10. The construction of the holster garment 10 distributes the various components of the computing device to allow for a better weight distribution, a lower heat accumulation, and a lesser electro-magnetic interference. This distribution of components also allows for proper securing onto the body, a better weight distribution, and also provides for better comfort and easy movement for the user.

Fig. 6 shows one configuration of the holster garment 10 with a computing device that is attached to the holster garment 10.

The computing device includes a main module 100 that comprises a processor board, an accessory module 101 that comprises a hard disk drive, a single battery module 102 with a battery controller module 103, as well as two USB connectors 104 together with two USB connectors 105a and 105b.

The processor board is mounted on one wing portion 20a or 20b while the hard disk drive is mounted on the other wing portion 20a or 20b. The battery module 102 is mounted on one shoulder strap 21a or 21b, while the battery controller module 103 is mounted on the other shoulder strap 21a or 21b. The USB connectors 104 are placed on each of the wing portions 20a and 20b while the USB connectors 105a and 105b are placed at the end portions of each of the shoulder straps 21a and 21b.

In use, this garment 10 with the computing device allows its user to move comfortably to various positions, such as kneeling, squatting, and lying down.

Fig. 7 shows one position of a user 230 while wearing the holster garment 10. The user 230 is in lying down position.

The user 230 is positioned on a movable board 240 with wheels 250 while the user 230 is placed below a horizontal flat panel 260. Referring to the holster garment 10, its wing portions 20a and 20b are positioned at the side waists of the user 230 while its shoulder straps 21a and 21b are positioned at the upper chest parts of the user 230.

The movable board 240 supports the back of the user 230 and the board 240 slides the user 230 to position the user 230 underneath the panel 260.

The holster garment 10 has an advantage in the side waists of the user 230 does not block the user 230 from sliding underneath the panel 260. In other words, the holster garment 10 allows the panel 260 to be placed very close to the user 230.

Fig. 8 shows a further holster garment 210 with a belt system. The holster garment 210 includes parts of the holster garment 10.

The holster garment 210 includes a belt system that replaces the front waist straps 26a and 26b and the rear waist straps 27a and 27b of the holster garment 10.

The belt system includes a pair of belt clamp bucket 215a and 215b with several belt loops 220.

One belt clamp bucket 215a is sewed to the outer belt loop 220 on the wing portion 20a while another belt clamp bucket 215b is sewed to the outer belt loop 220 on the wing portion 20b. The belt loops 220 are sewed to the wing portions 20a and 20b.

In use, the belt loops 220 and the belt clamp buckets 215a and 215b are used for receiving a belt. The belt clamp buckets 215a and 215b are also used for clamping parts of the belt
5 such that the clamped parts do not move with respect the belt clamp buckets 215a and 215b.

The belt together with the belt loops 220 and the belt clamp buckets 215a and 215b serves to keep the wing portions 20a and
10 20b secured to a user of the holster garment 210.

In summary, the embodiments provide an improved wearable computing device with key elements. The elements include electronics with a network of electrical wires, a communication
15 device with at least one antenna, and batteries.

In particular, the electronics are located in areas of the garment where heat generated by the electronics has little or minimum impact on the user of the wearable computing device
20 while allowing surfaces of the garment to dissipate the heat. The network of wire links electrically together the various components of the computing device while transmitting electrical power and data to these components. The communication device communicatively connects with a range of accessories using
25 either wired or wireless technologies via the antennas while these antennas are embedded in areas of the garment that promote effective communication. The computing device is located in areas of the garment that allows for easy replacement.

30 These elements are positioned ergonomically around a garment to balance the weight of the computing device while distributing parts of the computing device over a body of its user. This allows the improved computing device to be slim and compact.

In use, it covers only a small area of the body of the user. It can be worn in various climatic conditions. During hot weather, it can be worn over regular clothing while during
5 cold weather it can be worn underneath the clothing. It can also be secured comfortably to the body of the user such that it does not loosen during abrupt movement of the user. This allows its users to perform their tasks without impeding or restricting their movement. This is especially useful for us-
10 ers working on aircrafts where complicated tasks are performed sometimes in uncomfortable postures, such as the body lying face down or face up.

In one implementation, the computing device allows aircraft
15 technicians to double their productivity.

The improved wearable computing device differs from regular or off-the-shelf computer equipment, such as Personal Digital Assistant (PDA), notebook or tablet personal computer (PC),
20 which does not allow these users to perform these complicated tasks comfortably. The improved wearable computing device is also unlike other wearable computing devices, which are bulky and covers a large area of the user body. These computing devices can be built into backpack or into clothing with various
25 components that are big and are located in areas that impede or restrict movement of the user to perform their tasks.

The embodiments can also be described with the following lists of features or elements being organized into an item list. The
30 respective combinations of features, which are disclosed in the item list, are regarded as independent subject matter, respectively, that can also be combined with other features of the application.

1. A method for performing at least one of maintenance, repair, and overhaul (MRO) of a vehicle, the method comprising

providing a portable computing device in a body garment, wherein the providing of the portable computing device comprises

- providing at least one upper computing module of the portable computing device in at least one corresponding upper small component of the body garment,

- providing two lower computing modules of the portable computing device in two corresponding lower larger components of the body garment,

wearing the body garment on a human body, wherein the wearing of the body garment comprises

- placing the upper computing module next to an upper chest portion of the human body, and
- placing the lower computing module next to a waist side portion of the human body.

2. The method according to item 1 further comprising sliding the human body with the body garment below a part of the vehicle.

3. A wearable computing device comprising

a body garment that comprises

- at least one upper small component that comprises at least one corresponding upper computing module compartment,

- two lower larger components that comprise two corresponding lower computing module compartments,

- a connecting portion being connected to the at least one upper small component and to the two lower larger components, and

- a fastening device being connected to the two lower larger components,

a portable computing device that comprises

- at least one upper computing module being provided in the at least one corresponding upper computing module compartment and

- two lower computing modules being provided in the two corresponding lower computing module compartments, and

a human body wearing the body garment, wherein

- the upper computing module compartment is placed next to an upper chest portion of the human body, and

- the lower computing module compartment is placed next to a waist side portion of the human body.

4. A wearable computing device comprising

a body garment that comprises

- at least one upper small component, the upper small component comprising an upper computing module compartment for being placed next to an upper chest portion of a human body,

- two lower larger components, the lower larger component comprising a lower computing module compartment for being placed next to a waist side portion of the human body,

- a connecting portion being connected to the at least one upper small component and to the two lower larger components, and

- a fastening device being connected to the two lower larger components, and
- a portable computing device that comprises
- at least one upper computing module, the upper computing module being provided in the upper computing module compartment and
- two lower computing modules, the lower computing module being provided in the lower computing module compartment.

5. The wearable computing device according to item 3 or 4 further comprising
at least one channel being embedded in fabric layers of the at least one upper small component and the lower larger components, wherein
 - the channel encloses at least one electrical conductor, and
 - the electrical conductor is connected to at least one of the lower computing module and the two upper computing modules.
6. The wearable computing device according to one of items 3 to 5, wherein
each of the upper computing module compartment and the lower computing module compartment comprises at least one opening, the opening is connected to the channel.
7. The wearable computing device according to one of items 3 to 6, wherein
the channel encloses an antenna.
8. The wearable computing device according to one of the items 3 to 7, wherein

the fastening device comprises at least one strap with at least one fastener.

9. The wearable computing device according to one of items 3 to 7, wherein the fastening device comprises at least one belt fastener with at least one belt loop.

10. The wearable computing device according to one of items 3 to 9, wherein the weight of the two lower computing modules are similar.

11. The wearable computing device according to one of items 3 to 10, wherein

a group consisting of the at least one upper computing module and the two lower computing modules comprises

- a processor module,
- a memory storage module,
- a battery module, and
- a battery controller module.

12. A body garment for a wearable computing device, the body garment comprising

at least one upper small component, the upper small component comprising an upper computing module compartment for being placed next to an upper chest portion of a human body to hold an upper computing module of a portable computing device,

two lower larger components, the lower larger component comprising a lower computing module compartment for being placed next to a waist side portion of the human body to hold a lower computing module of the portable computing device,

a connecting portion being connected to the at least one upper small component and to the two lower larger components, and

a fastening device being connected to the two lower larger components.

13. The body garment according to item 12 further comprising at least one channel being embedded in fabric layers of the at least one upper small component and of the lower larger components, wherein

- the channel encloses at least one electrical conductor, and
- the electrical conductor is provided for connecting to at least one of the lower computing module and the upper computing module.

14. The body garment according to item 12 or 13, wherein each of the upper computing module compartment and the lower computing module compartment comprises at least one opening, the opening being connected to the channel.

15. The body garment according to one of items 12 to 14, wherein the channel encloses an antenna.

16. The body garment according to one of items 12 to 15, wherein the fastening device comprises at least one strap with at least one fastener.

17. The body garment according to one of items 12 to 15, wherein the fastening device comprises at least one belt fastener with at least one belt loop.

Although the above description contains much specificity,
these should not be construed as limiting the scope of the em-
bodiments but merely providing illustration of the foreseeable
5 embodiments. Especially the above stated advantages of the em-
bodiments should not be construed as limiting the scope of the
embodiments but merely to explain possible achievements if the
described embodiments are put into practice. Thus, the scope
of the embodiments should be determined by the claims and
10 their equivalents, rather than by the examples given.

Reference number

	10	holster garment
	20a	wing portion
5	20b	wing portion
	21a	shoulder strap
	21b	shoulder strap
	22	small body
	25a	shoulder adjustment strap
10	25b	shoulder adjustment strap
	26a	front waist strap
	26b	front waist strap
	27a	rear waist strap
	27b	rear waist strap
15	30a	major module compartment
	30b	major module compartment
	31a	minor module compartment
	31b	minor module compartment
	40	layer with fine-mesh netting material
20	41	layer with reflective material
	42	layer with thick fluffy material
	43	layer with soft fabric
	44	embedded channel
	45	conductor
25	50a	fabric
	50b	fabric
	51a	channel opening
	51b	channel opening
	52a	channel opening
30	52b	channel opening
	53	USB connector opening
	60	external channel network
	61	external channel
	62	external channel

	70a	fixed loop
	70b	fixed loop
	71a	button flap
	71b	button flap
5	80a	channel access opening
	80b	channel access opening
	80c	channel access opening
	80d	channel access opening
	81a	plate opening
10	81b	plate opening
	82	screw hole
	100	main module
	101	accessory module
	102	single battery module
15	103	battery controller module
	104	USB connector
	105a	USB connector
	105b	USB connector
	210	holster garment
20	215a	belt clamp bucket
	215b	belt clamp bucket
	220	belt loop
	230	user
	240	movable board
25	250	wheel
	260	flat panel

Claims

1. A method for performing at least one of maintenance, repair, and overhaul (MRO) of a vehicle, the method comprising

providing a portable computing device in a body garment, wherein the providing of the portable computing device comprises

- providing at least one upper computing module of the portable computing device in at least one corresponding upper small component of the body garment,

- providing two lower computing modules of the portable computing device in two corresponding lower larger components of the body garment,

wearing the body garment on a human body, wherein the wearing of the body garment comprises

- placing the upper computing module next to an upper chest portion of the human body, and

- placing the lower computing module next to a waist side portion of the human body.

2. The method according to claim 1 further comprising sliding the human body with the body garment below a part of the vehicle.

3. A wearable computing device comprising

a body garment that comprises

- at least one upper small component that comprises at least one corresponding upper computing module compartment,

- two lower larger components that comprise two corresponding lower computing module compartments,

- a connecting portion being connected to the at least one upper small component and to the two lower larger components, and
- a fastening device being connected to the two lower larger components,

a portable computing device that comprises

- at least one upper computing module being provided in the at least one corresponding upper computing module compartment and
- two lower computing modules being provided in the two corresponding lower computing module compartments, and

a human body wearing the body garment, wherein

- the upper computing module compartment is placed next to an upper chest portion of the human body, and
- the lower computing module compartment is placed next to a waist side portion of the human body.

4. The wearable computing device according to claim 3 further comprising

at least one channel being embedded in fabric layers of the at least one upper small component and the lower larger components, wherein

- the channel encloses at least one electrical conductor, and
- the electrical conductor is connected to at least one of the lower computing module and the two upper computing modules.

5. The wearable computing device according to claim 3, wherein

each of the upper computing module compartment and the lower computing module compartment comprises at least one opening, the opening is connected to the channel.

- 5 6. The wearable computing device according to claim 3,
 wherein
 the channel encloses an antenna.
- 10 7. The wearable computing device according to claim 3,
 wherein
 the fastening device comprises at least one strap with at
 least one fastener.
- 15 8. The wearable computing device according to claim 3,
 wherein
 the fastening device comprises at least one belt fastener
 with at least one belt loop.
- 20 9. The wearable computing device according to claim 3,
 wherein
 the weight of the two lower computing modules are similar.
- 25 10. The wearable computing device according to claim 3,
 wherein
 a group consisting of the at least one upper computing
 module and the two lower computing modules comprises
 - a processor module,
 - a memory storage module,
 - a battery module, and
30 - a battery controller module.
11. A wearable computing device comprising
 a body garment that comprises

- at least one upper small component, the upper small component comprising an upper computing module compartment for being placed next to an upper chest portion of a human body,
- 5 - two lower larger components, the lower larger component comprising a lower computing module compartment for being placed next to a waist side portion of the human body,
- 10 - a connecting portion being connected to the at least one upper small component and to the two lower larger components, and
- a fastening device being connected to the two lower larger components, and
- a portable computing device that comprises
- 15 - at least one upper computing module, the upper computing module being provided in the upper computing module compartment and
- two lower computing modules, the lower computing module being provided in the lower computing module compartment.
- 20

12. The wearable computing device according to claim 11 further comprising
- at least one channel being embedded in fabric layers of
- 25 the at least one upper small component and the lower larger components, wherein
- the channel encloses at least one electrical conductor, and
 - the electrical conductor is connected to at
 - 30 least one of the lower computing module and the two upper computing modules.

13. The wearable computing device according to claim 11, wherein

each of the upper computing module compartment and the lower computing module compartment comprises at least one opening, the opening is connected to the channel.

- 5 14. The wearable computing device according to claim 11,
wherein
the channel encloses an antenna.
- 10 15. The wearable computing device according to claim 11,
wherein
the fastening device comprises at least one strap with at
least one fastener.
- 15 16. The wearable computing device according to claim 11,
wherein
the fastening device comprises at least one belt fastener
with at least one belt loop.
- 20 17. The wearable computing device according to claim 11,
wherein
the weight of the two lower computing modules are similar.
- 25 18. The wearable computing device according to claim 11,
wherein
a group consisting of the at least one upper computing
module and the two lower computing modules comprises
- a processor module,
 - a memory storage module,
 - a battery module, and
 - 30 - a battery controller module.
19. A body garment for a wearable computing device, the body
garment comprising

at least one upper small component, the upper small component comprising an upper computing module compartment for being placed next to an upper chest portion of a human body to hold an upper computing module of a portable computing device,

two lower larger components, the lower larger component comprising a lower computing module compartment for being placed next to a waist side portion of the human body to hold a lower computing module of the portable computing device,

a connecting portion being connected to the at least one upper small component and to the two lower larger components, and

a fastening device being connected to the two lower larger components.

20. The body garment according to claim 19 further comprising at least one channel being embedded in fabric layers of the at least one upper small component and of the lower larger components, wherein

- the channel encloses at least one electrical conductor, and
- the electrical conductor is provided for connecting to at least one of the lower computing module and the upper computing module.

21. The body garment according to claim 19, wherein each of the upper computing module compartment and the lower computing module compartment comprises at least one opening, the opening being connected to the channel.

22. The body garment according to claim 19, wherein the channel encloses an antenna.

23. The body garment according to claim 19, wherein the fastening device comprises at least one strap with at least one fastener.

5 24. The body garment according to claim 19, wherein the fastening device comprises at least one belt fastener with at least one belt loop.