For instance, the user can more easily conceal the presence of the characteristic monitor system **2010**, since a wire will not be visible (or cumbersome), with clothing. In also makes it is easier to protect the characteristic monitor **2200**, which can be removed from the user's body during showers, exercise, sleep or the like. In addition, the use of multiple components (e.g., transmitter **2100** and characteristic monitor **2200** with a characteristic meter) facilitates upgrades or replacements, since one module or the other can be modified or replaced without requiring complete replacement of the characteristic monitor system **2010**. Further, the use of multiple components can improve the economics of manufacturing, since some components may require replacement on a more frequent basis, sizing requirements may be different for each module, there may be different assembly environment requirements, and modifications can be made without affecting the other components.

[**0089**] **FIG. 1** is a perspective view of a system **1** using a handheld data assistant (PDA) **10** and computer **12** in accordance with an embodiment of the present invention. Preferred embodiments, use a PDA **10** such as the Visor 1003E by Handspring. However, alternative embodiments, may use standard or customized personal data assistants such as, but not limited to, the Palm Pilot, Palm III, Palm V and/or Palm VII by Palm Computing a division of 3 COM, the PCS NP 1000 by Sprint, the pdQ 1900 by Qualcomm, the AutoPC by Clarion, Newton by Apple, the Cassiopeia by Casio, Blackberry by Research In Motion Limited, or the like. In preferred embodiments, the computer **12** includes a computer processing unit **14**, a monitor **16**, a key board **18** and a mouse **20**. The computer **12** also includes a PDA cradle **22** connected to the computer **12** by a cable **24** to provide two-way data communication between the PDA **10** and the computer **12**. In alternative embodiments, the PDA cradle **22** may connect to the computer using a wireless connection. In further alternative embodiments, the PDA cradle **22** may be omitted and the PDA **10** includes a receiver and transmitter and/or a jack to provide the two-way communication between the PDA **10** and the computer **12**. In further alternative embodiments, the computer **12** may be replaced with a different processing device, such as a data processor, a laptop computer, a modem or other connection to a network computer server, an internet connection, or the like.

[**0090**] **FIGS. 2 and 3** are views of a PDA **10** with a medical device module **200** in accordance with an embodiment of the present invention. The PDA **10** includes a display **102** mounted in a case **104**. The case includes a plurality of physical keys **106** and **108** to activate and control various features on the PDA **10**. The display **102** of the PDA **10** is a touch screen LCD that allows the display of various icons **110** representative of different programs available on the PDA **10**. The icons **110** on the display **102** may be activated by finger pressure or the touch of a stylus **112**. The display **102** may also be used to show graphs, tabular data, animation, or the like. The display **102** also includes a region with hard icons **114** that represent regular program activating features and a writing area **116** for entering data using the stylus **112**. Preferred embodiments of the PDA **10** are adapted for use of the Palm computing software and standards developed by 3 Com. However, alternative embodiments may use computing software and standards produced by other companies.

[**0091**] As shown in **FIG. 3**, the PDA **10** has a slot **120** formed in the back **124** of the case **104** of the PDA **10** for receiving the medical device module **200**. The slot **120** includes connector contacts **122** that mate with corresponding contacts **222** on the medical device module **200**. Thus, the PDA **10** provides a standard user interfaces, including standard PDA features and programmability, that the user knows and understands. A medical device manufacturer primarily only needs to design, build and qualify a medical device module that interfaces with a standard PDA **10** interface and uses the existing hardware of the PDA **10** to interact with the user. Therefore, a medical device manufacturer focuses primarily on a medical device module that can be interchanged by the user to provide the user with a desired capability or function on a known and/or familiar device, the PDA **10**. Further embodiments (not shown) may use multiple medical device modules or a medical device module that includes more than one medical device submodule.

[**0092**] **FIG. 4** illustrates a perspective view of a PDA **10**, in accordance with a preferred embodiment of the present invention. The PDA **10** includes a subcutaneous sensor set **150** (i.e., a sensor portion is implanted in, for example, dermal subdermal, subcutaneous tissues, or the like), a telemetered characteristic monitor transmitter **100** connected to the sensor set **150** through a sensor cable/connector **180**, and a medical device module **200** that includes a characteristic monitor **200'** and a characteristic meter **300**. The subcutaneous sensor set **150** utilizes an electrode-type sensor, as described in more detail in U.S. Pat. No. 5,391,250, entitled "Method Of Fabricating Thin Film Sensors", U.S. Pat. No. 5,482,473, entitled "Flex Circuit Connector", U.S. Pat. No. 5,390,671, entitled "Transcutaneous Sensor Insertion Set", U.S. Pat. No. 5,568,806, entitled "Transcutaneous Sensor Insertion Set", U.S. Pat. No. 5,586,553, entitled "Transcutaneous Sensor Insertion Set", U.S. Pat. No. 5,779,655, entitled "Transducer Introducer Assembly" and co-pending U.S. Pat. No. 5,954,643, entitled "Insertion Set for a Transcutaneous Sensor," all of which are herein incorporated by reference. However, in alternative embodiments, the sensor may use other types of sensors, such as chemical based, optical based, or the like. In further alternative embodiments, the sensors may be of a type that is used on the external surface of the skin or placed just below the skin layer of the user. Preferred embodiments of a surface mounted sensor would utilize interstitial fluid harvested from underneath the skin.

[**0093**] The telemetered characteristic monitor transmitter **100** generally includes the capability to transmit data. However, in alternative embodiments, the telemetered characteristic monitor transmitter **100** may include a receiver, or the like, to facilitate two-way communication of data reading between the sensor set **150** and the characteristic monitor **200'** of the medical device module **200**. The characteristic monitor **200'** in the medical device module **200** utilizes the transmitted data to determine the characteristic reading. Although a telemetered approach that utilizes RF is preferred, other wireless techniques, such as optical, IR, ultrasonic, or the like may be used. In addition, wired connections may be utilized instead of a telemetered transmission of data from the sensor **150** to the medical device module **200** (see **FIG. 18** below).