

WHAT IS CLAIMED IS:

1. A modular case assembly for a selected range of tablet computers, the modular assembly comprising:

a tablet carrier encasing a selected tablet computer selected from the range of tablet computers, the selected tablet computer having a length, a width, one or more ports, and an external button configuration;

an exterior housing enclosing the tablet carrier, the exterior housing comprising at least one battery and a controller for communication with the selected tablet computer;

an end cap attached to the exterior housing and including a functional device in communication with the controller by a connector;

wherein the tablet carrier has internal surfaces for retaining the selected tablet computer while still providing access to the one or more ports and the external button configuration of the selected tablet computer,

wherein the at least one battery and the controller contained by the exterior housing are operatively connected to one or more ports of the tablet computer so as to allow communication of power and data between the controller, the tablet computer, and the functional device of the end cap, and

wherein the tablet carrier and/or exterior housing comprises at least one programmable button for communicating with the tablet computer to implement a specified function via at least the controller when connected for communication with the tablet computer.

2. The assembly according to claim 1, wherein the tablet carrier comprises a top portion and a bottom portion, the top portion and the bottom portion of the tablet carrier having the internal surfaces for retaining the selected tablet computer.

3. The assembly according to claim 1, further comprising one or more actuators for actuating one or more buttons on the tablet computer, wherein the at least one programmable button is configured to cause at least one of the one or more actuators to actuate its corresponding button.

4. The assembly according to claim 3, further comprising one or more mechanical devices associated with the one or more actuators, wherein each of the one or more actuators

is configured to activate movement of the one or more mechanical devices to thereby actuate a corresponding button on the tablet computer.

5. The assembly according to claim 3, wherein the at least one programmable button is provided on a first axis for actuation along the first axis, wherein the corresponding button configured for actuation by the at least one of the one or more actuators is provided on a second axis for actuation along the second axis, and wherein the first axis and second axis are different from each other.

6. The assembly according to claim 5, wherein the programmable button is provided on a plane that is parallel to a plane of the corresponding button.

7. The assembly according to claim 5, wherein the programmable button is provided on a plane that is perpendicular to a plane of the corresponding button.

8. The assembly according to claim 3, wherein the one or more actuators is a shape memory material.

9. The assembly according to claim 3, wherein the one or more actuators is a solenoid.

10. A modular case assembly for a selected range of tablet computers, the modular assembly comprising:

- a tablet carrier encasing a selected tablet computer selected from the range of tablet computers, the selected tablet computer having a length, a width, one or more ports, and an external button configuration;

- an exterior housing enclosing the tablet carrier, the exterior housing comprising at least one battery and a controller for communication with the selected tablet computer;

- an end cap attached to the exterior housing and including a functional device in communication with the controller by a connector;

- wherein the tablet carrier has internal surfaces for retaining the selected tablet computer while still providing access to the one or more ports and the external button configuration of the selected tablet computer,

wherein the at least one battery and the controller contained by the exterior housing are operatively connected to one or more ports of the tablet computer so as to allow communication of power and data between the controller, the tablet computer, and the functional device of the end cap, and

wherein the end cap is configured to be interchangeable with one or more replacement end caps comprising different functional devices, and wherein the one or more replacement end caps have a connector for connecting to the controller, and wherein the one or more replacement end caps are configured to be installed on the exterior housing.

11. The assembly according to claim 1, further comprising an additional, second end cap attached to the exterior housing and including a functional device in communication with the controller by a connector, and

wherein the at least one battery and the controller are operatively connected so as to further allow communication of power and with the functional device of the additional, second end cap.

12. The assembly according to claim 1, wherein the functional device of the end cap is selected from the group consisting of: a magnetic strip reader and/or writer, a smart card reader, a secure chip and pin access device, an RFID reader, a scanner, a battery, a power source, a camera, an image capture device, and a geo-tracking device.

13. A method for installing a plurality of modular assemblies to a plurality of tablet computers having varying lengths and/or widths and one or more ports and button configurations, said method comprising:

providing a plurality of first tablet carriers that are each configured to encase a first type of tablet computer when the carriers are installed on their corresponding tablet computers;

providing a plurality of second tablet carriers that are each configured to encase a second type of tablet computer when the carriers are installed on their corresponding tablet computers, the second type of tablet computer being different than the first type of tablet computer;

wherein the plurality of the first and the second tablet carriers each have internal surfaces for retaining the respective first and second types of tablet computers while still

providing access to the one or more ports and buttons of the first and second types of tablet computers when the first and second tablet carriers are installed therearound;

providing a plurality of common exterior housings that are each configured to enclose the first and second tablet carriers once the first and second tablet carriers are installed on their corresponding tablet computers, each exterior housing comprising at least one battery and a controller for communication with its corresponding tablet computer;

providing a plurality of end caps each configured for attachment to the plurality of common exterior housings and including a functional device for communication with the controller by a connector; and,

wherein the method further includes:

installing the first tablet carriers on the first type of tablet computers,

installing the second tablet carriers on the second type of tablet computers, and

installing the common exterior housings to enclose the first and second tablet carriers therein with the respective first and second types of tablet computers installed;

installing the end caps on the common exterior housings and establishing communication between the controllers and the functional devices;

wherein the installing of each of the common exterior housings includes operatively connecting the at least one battery and the controller to one or more ports of each of the corresponding tablet computers so as to allow communication of power and data between the controllers, the corresponding tablet computers, and the functional devices of the end caps.

14. The method according to claim 13, wherein the tablet carrier comprises a top portion and a bottom portion, the top portion and the bottom portion of the tablet carrier having the internal surfaces for retaining the selected tablet computer.

15. The method according to claim 13, wherein the installing further comprises connecting the connector of each of the selected end caps to the controllers so as to allow communication between each of the selected end caps and the controllers.

16. The method according to claim 13, wherein the first and second tablet carriers and/or common exterior housings comprise at least one programmable button for communicating with its corresponding tablet computers to implement a specified function via at least the controller when connected for communication with the corresponding tablet computers.

17. The method according to claim 16, wherein each the first and second tablet carriers and/or each of the common exterior housings further comprise one or more actuators for actuating one or more buttons on the respective tablet computers, and wherein the at least one programmable button is configured to cause at least one of the one or more actuators to actuate its corresponding button.

18. The method according to claim 17, wherein each the first and second tablet carriers and/or each of the common exterior housings further comprise one or more mechanical devices associated with the one or more actuators, wherein the one or more actuators is configured to activate movement of the one or more mechanical device to thereby actuate a corresponding button on the tablet computer, and wherein the installing of the first and second tablet carriers or the installing of the common exterior housings further comprises aligning the one or more mechanical devices relative to the tablet computer for actuating the corresponding button on the tablet computer.

19. The method according to claim 13, wherein the selected end caps are configured to be interchangeable with one or more replacement end caps comprising different functional devices, and wherein the method further comprises:

removing the selected end caps from the common exterior housings;

selecting replacement end caps; and

installing the replacement end caps on the common exterior housings with respect to the installed first and second tablet carriers,

wherein the installing of each of the replacement end caps allows communication of power and data between the controllers, the corresponding tablet computers, and the replacement end caps.

20. The method according to claim 19, wherein the removing of the selected end caps further comprises removing the selected end caps from the common exterior housings by disconnecting a connector of the selected end caps from the controller, and wherein the installing of each of the replacement end caps includes connecting the connector of the replacement end caps to the controller so as to allow communication between the replacement end caps and the controller.

21. An encased tablet computer system comprising:
a tablet computer,
a tablet carrier encasing the tablet computer, the tablet computer having a length, a width, one or more ports, and an external button configuration;
an exterior housing enclosing the tablet carrier, the exterior housing comprising at least one battery and a controller for communication with the tablet computer;
an end cap attached to the exterior housing and including a functional device in communication with the controller by a connector;
wherein the tablet carrier has internal surfaces for retaining the tablet computer while still providing access to the one or more ports and the external button configuration of the tablet computer,
wherein the at least one battery and the controller contained by the exterior housing are operatively connected to one or more ports of the tablet computer so as to allow communication of power and data between the controller, the tablet computer, and the functional device of the end cap, and
wherein the tablet carrier and/or exterior housing comprises at least one programmable button for communicating with the tablet computer to implement a specified function via at least the controller when connected for communication with the tablet computer.
22. The system according to claim 21, wherein the tablet carrier comprises a top portion and a bottom portion, the top portion and the bottom portion of the tablet carrier having the internal surfaces for retaining the tablet computer.
23. The system according to claim 22, further comprising one or more actuators for actuating one or more buttons on the tablet computer, wherein the at least one programmable button is configured to cause at least one of the one or more actuators to actuate its corresponding button.
24. The system according to claim 23, further comprising one or more mechanical devices associated with the one or more actuators, wherein the one or more actuators is

configured to activate movement of the one or more mechanical device to thereby actuate a corresponding button on the tablet computer.

25. The system according to claim 23, wherein the at least one programmable button is provided on a first axis for actuation along the first axis, wherein the corresponding button configured for actuation by the at least one of the one or more actuators is provided on a second axis for actuation along the second axis, and wherein the first axis and second axis are different from each other.

26. The system according to claim 25, wherein the programmable button is provided on a plane that is parallel to a plane of the corresponding button.

27. The system according to claim 25, wherein the programmable button is provided on a plane that is perpendicular to a plane of the corresponding button.

28. The system according to claim 23, wherein the one or more actuators is a shape memory material.

29. The system according to claim 23, wherein the one or more actuators is a solenoid.

30. An encased tablet computer system comprising:
a tablet computer,
a tablet carrier encasing the tablet computer, the tablet computer having a length, a width, one or more ports, and an external button configuration;
an exterior housing enclosing the tablet carrier, the exterior housing comprising at least one battery and a controller for communication with the tablet computer;
an end cap attached to the exterior housing and including a functional device in communication with the controller by a connector;
wherein the tablet carrier has internal surfaces for retaining the tablet computer while still providing access to the one or more ports and the external button configuration of the tablet computer,
wherein the at least one battery and the controller contained by the exterior housing are operatively connected to one or more ports of the tablet computer so as to allow

communication of power and data between the controller, the tablet computer, and the functional device of the end cap, and

wherein the end cap is configured to be interchangeable with one or more replacement end caps comprising different functional devices, and wherein the one or more replacement end caps have a connector for connecting to the controller, and wherein the one or more replacement end caps are configured to be installed on the exterior housing.

31. The system according to claim 21, further comprising an additional, second end cap attached to the exterior housing and including a functional device in communication with the controller by a connector, and

wherein the at least one battery and the controller are operatively connected so as to further allow communication of power and with the functional device of the additional, second end cap.

32. The system according to claim 21, wherein the functional device of the end cap is selected from the group consisting of: a magnetic strip reader and/or writer, a smart card reader, a secure chip and pin access device, an RFID reader, a scanner, a battery, a power source, a camera, an image capture device, and a geo-tracking device.

33. A method for automatically monitoring and charging a tablet computer enclosed within a modular case assembly, the modular assembly comprising: a tablet carrier encasing the tablet computer, the tablet computer having a length, a width, one or more ports, a tablet battery, and an external button configuration, an exterior housing enclosing the tablet carrier, the exterior housing comprising at least one case battery and a controller for communication with the tablet computer, at least one end cap attached to the exterior housing and including a functional device in communication with the controller by a connector, the tablet carrier having internal surfaces for retaining the tablet computer while still providing access to the one or more ports and the external button configuration of the tablet computer, the at least one case battery and the controller being contained by the exterior housing and operatively connected to one or more ports of the tablet computer so as to allow communication of power and data between the controller, the tablet computer, and the functional device of the at least one end cap; wherein the method comprises:

automatically monitoring a state of charge of the at least one case battery;

automatically monitoring a state of charge of the tablet battery; and
automatically charging the tablet battery using the at least one case battery.

34. The method according to claim 33, wherein the automatically monitoring a state of charge of the tablet battery comprises determining if the state of charge of the tablet battery is less than a predetermined amount of its total capacity, and wherein the automatically charging the tablet battery using the at least one case battery is performed after determining that the state of charge of the tablet battery is less than the predetermined amount.

35. The method according to claim 34, wherein the automatically monitoring a state of charge of the tablet battery further comprises determining if the state of charge of the at least one case battery is less than a predetermined amount of its total capacity, and wherein the automatically charging the tablet battery using the at least one case battery is performed after further determining that the state of charge of the at least one case battery is less than the predetermined amount.

36. The assembly according to claim 10, wherein the functional devices of the end caps are selected from the group consisting of: a magnetic strip reader and/or writer, a smart card reader, a secure chip and pin access device, an RFID reader, a scanner, a battery, a power source, a camera, an image capture device, and a geo-tracking device.

37. The system according to claim 30, wherein the functional devices of the end caps are selected from the group consisting of: a magnetic strip reader and/or writer, a smart card reader, a secure chip and pin access device, an RFID reader, a scanner, a battery, a power source, a camera, an image capture device, and a geo-tracking device.

38. The assembly according to claim 1, further comprising one or more LED indicators configured for illumination to indicate a specific action associated with the tablet carrier.

39. The system according to claim 21, further comprising one or more LED indicators configured for illumination to indicate a specific action associated with the tablet carrier.