Claims

What is claimed is:

1. A method for replacing a first wireless node in an IoT system comprising:

determining, by the first wireless node, that the first wireless node is in need of imminent replacement;

transmitting, by the first wireless node, a first notification to another wireless node of the IoT system that the first wireless node is in need of imminent replacement;

initiating, by the first wireless node, a discovery protocol for a second wireless node installed in proximity to the first wireless node;

upon discovery of the second wireless node, wirelessly connecting, by the first wireless node, with the second wireless node; and

responsive to successful wireless connection between the first wireless node and the second wireless node, transmitting, by the first wireless node, a configuration file to the second wireless node, wherein

the second wireless node copies the received configuration file to a storage of the second wireless node, and

the second wireless node configures itself to operate as a replacement for the first wireless node in the IoT system, based at least in part on the copied configuration file.

2. The method of claim 1, wherein responsive to completing the configuration of the second wireless node, the second wireless node transmits a confirmation to the first wireless node that the second wireless node is successfully configured for replacing the first wireless node in the IoT system.

3. The method of claim 2, further comprising, responsive to receiving the confirmation from the second wireless node, deactivating, by the first wireless node, the first wireless node.

4. The method of claim 2, further comprising, responsive to receiving the confirmation from the second wireless node, performing, by the first wireless node, activities to deplete a battery of the first wireless node.

5. The method of claim 1, wherein the determining the first wireless node is in need of imminent replacement is based on a battery level of the first wireless node being below a threshold level.

6. The method of claim 1, wherein the determining the first wireless node is in need of imminent replacement is based on a diagnostic test of the first wireless node being failed.

7. The method of claim 1, wherein the second wireless node is installed within a threshold distance of the first wireless node.

8. The method of claim 7, wherein the threshold distance corresponds to a wireless range of a wireless communication system of the first wireless node and the second wireless node.

9. The method of claim 1, wherein the first wireless node and the second wireless node are both installed on a same asset.

10. The method of claim 1, wherein the first wireless node is uninstalled from an asset, in response to the second wireless node successfully completing configuration to replace the first wireless node.

11. An adhesive tape platform comprising:

a flexible substrate;

a device layer comprising:

a processor,

a first wireless communication system, and

a memory coupled to the processor;

a battery;

flexible circuit connecting components of the device layer; and

a flexible cover layer covering the flexible substrate, the device layer, and the flexible circuit, wherein

the adhesive tape platform is configured to:

wirelessly receive a configuration file from a first wireless node using the first wireless communication system,

copy the received configuration file to the memory,

complete a configuration of the adhesive tape platform as a replacement for the first wireless node based at least in part on copied configuration file.

12. The adhesive tape platform of claim 11, wherein the adhesive tape platform is installed within a threshold distance from the first wireless node.

13. The adhesive tape platform of claim 11, wherein the adhesive tape platform is installed on an a same asset that the first wireless node is installed on.

14. The adhesive tape platform of claim 13, wherein the first wireless node is also an adhesive tape platform.

15. The adhesive tape platform of claim 11, wherein the first wireless communication system is a Bluetooth or BLE communication system.

16. An Internet of Things (IoT) system comprising:

a first IoT device installed on an asset and comprising a first type of wireless communication system, the first IoT device configured to:

monitor the asset, and

transmit a configuration file using the first type of wireless communication system to an IoT device replacing the first IoT device, in response to determining that the first wireless node needs imminent replacement; and

a second IoT device installed in proximity to the first IoT device, in response to the first IoT device determining that the first IoT device needs imminent replacement, the second IoT device comprising the first type of wireless communication system and configured to:

wirelessly receive the configuration file from the first wireless node using the first type of wireless communication system, and

complete a configuration process for replacing the first IoT device based at least in part on the received configuration file,

wherein, responsive to the second IoT device completing the configuration process, the second IoT begins operating, assuming a role and identity of the first IoT device in the IoT system.

17. The IoT system of claim 16, wherein the first IoT device receives a confirmation that the second IoT has completed the configuration process, and in response, the first IOT device deactivates.

18. The IoT system of claim 16, further comprising an intermediary IoT device comprising the first type of communications system and configured to coordinate a discovery process for wirelessly connecting the first IoT device to the second IoT device.

19. The IoT system of claim 18, wherein the intermediary IoT device is a line-powered device.

20. The IoT system of claim 16, wherein, responsive to determining that the first IoT device needs imminent replacement, the first IoT device transmits a notification to another wireless node of the IoT system including instructions for a human operator to install the second IoT device in proximity to the first IoT device.

21. A method comprising:

initiating, by the first wireless node, a discovery protocol for another wireless node installed in proximity to the first wireless node;

upon discovery of a second wireless node, wirelessly connecting, by the first wireless node, with the second wireless node; and

responsive to successful wireless connection between the first wireless node and the second wireless node, transmitting, by the first wireless node, a configuration file to the second wireless node, wherein

the second wireless node copies the received configuration file to a memory or storage of the second wireless node, and

the second wireless node configures itself to operate as a replacement for the first wireless node in the IoT system, based at least in part on the copied configuration file.

22. An Internet of Things (IoT) system comprising:

a first IoT device installed on an asset and comprising a first type of wireless communication system, the first IoT device configured to:

monitor the asset, and

transmit a configuration file using the first type of wireless communication system to an IoT device replacing the first IoT device, in response to determining that the first wireless node needs imminent replacement; and

a second IoT device installed in proximity to the first IoT device at a time of installation later than a time of installation of the first IOT device and configured to:

wirelessly receive the configuration file from the first wireless node using the first type of wireless communication system, and

complete a configuration process for replacing the first wireless node using the first type of wireless communication system, and

complete a configuration process for replacing the first IoT device based at least in part on the received configuration file,

wherein, responsive to the second IoT device completing the configuration process, the second IoT begins operating, assuming a role and identity of the first IoT device in the IoT system.

23. The method of claim 21, further comprising, prior to initiating the discovery protocol, determining, by the first wireless node, that the first wireless node is in need of replacement.

24. The method of claim 23, wherein the determining that the first wireless node is in need of replacement is based on detecting that a battery level of the first wireless node is below a threshold level.

25. The method of claim 21, wherein the first wireless node initiates the discovery protocol in response to an event detected by the first wireless node or by a tracking system associated with the first wireless node.

26. The method of claim 25, wherein the detected event corresponds to the first wireless sensing node detecting stimulus provided by a user.

27. The method of claim 26, wherein the stimulus comprises one or more of the user providing an input on a client device, the user scanning a bar code or QR code on a client device, the user brining a magnet or a magnetic device near the first wireless node, the user shining a light on a portion of the first wireless node, the user cutting or tearing a portion of the first wireless node, and the user shaking or moving the first wireless node.

28. The method of claim 21, further comprising:

receiving, by the first wireless node, confirmation from the second wireless node that the second wireless node has successfully copied the configuration file and is now operating as a replacement for the first wireless node.

29. The method of claim 28, further comprising:

responsive to receiving the confirmation, deactivating, by the first wireless node, itself

30. The method of claim 28, further comprising, waiting, by the first wireless node, a period of time after receiving the confirmation, before deactivating itself

31. A method comprising:

initiating, by a first wireless node, a discovery protocol for another wireless node installed in proximity to the first wireless node;

upon discovery of a second wireless node, wirelessly connecting, by the first wireless node, with the second wireless node;

determining, by the first wireless node, that the second wireless node is requesting a replacement;

responsive to successful wireless connection between the first wireless node and the second wireless node and responsive to determining that the second wireless node is requesting a replacement, receiving, by the first wireless node, a configuration from the second wireless node, wherein

the first wireless node copies the received configuration file to a memory or storage of the first wireless node, and

the first wireless node configures itself to operate as a replacement for the second wireless node in the IoT system, based at least in part on the copied configuration file.

32. The method of claim 31, wherein the second wireless node requests a replacement in response to detecting that a battery level of the second wireless node is below a threshold level.

33. The method of claim 31, wherein the second wireless node requests a replacement in response to an event detected by the second wireless node or by a tracking system associated with the second wireless node.

34. The method of claim 33, wherein the detected event corresponds to the first wireless sensing node detecting stimulus provided by a user.

35. The method of claim 34, wherein the stimulus comprises one or more of the user providing an input on a client device, the user scanning a bar code or QR code on a client device, the user brining a magnet or a magnetic device near the first wireless node, the user shining a light on a portion of the first wireless node, the user cutting or tearing a portion of the first wireless node, and the user shaking or moving the first wireless node.

36. The method of claim 31, further comprising:

prior to configuring itself, determining, by the first wireless node, that the first wireless node has successfully copied the received configuration file to its memory or storage; and

in response, transmitting a confirmation to the second wireless node indicating that the first wireless node has successfully copied the received configuration file and is operating as a replacement for the second wireless node.

37. The method of claim 31, wherein in response to receiving the confirmation, the second wireless node deactivates itself.