system may be upgraded over the life of the vehicle. Further, later generation nodes and devices may be added to the network as part of the upgrade, taking advantage of the self-assembly features of WINS NG systems. The layered processing and APIs in WINS NG nodes can present a common interface to other devices that get added to the vehicle, hiding differences in the sensory and control networks among different vehicle makes. Thus, the WINS NG system becomes a universal socket by which devices are added to automotive networks. More broadly, the WINS NG gateways perform a similar function in monitoring and controlling processes in the physical world.

The foregoing description of various embodiments of the invention has been presented for purpose of illustration and description. It is not intended to limit the invention to the precise forms disclosed. Many modifications and equivalent arrangements will be apparent.

What is claimed is:

1. A node of plurality of intercoupled network nodes distributed in an environment, the node comprising:

at least one sensor, wherein the at least one sensor receives signals generated in the environment;

at least one communication device;

at least one preprocessor operating on real time processes; and

at least one processor coupled to the preprocessor, wherein the node is configurable at one of a plurality of programming layers through a plurality of application program interfaces (APIs), wherein the programming layers comprise a physical layer including real time processes, and an operating system layer including non-real time processes.

2. The node of claim **1**, wherein the node further comprises a storage device, wherein the storage device is part of a distributed database.

3. The node of claim **1**, wherein the at least one communication device supports at least one of wireless communications, wired communications, and hybrid wired and wireless communications.

4. The node of claim **3**, wherein the node is coupled to at least one remote computer through a plurality of network elements, wherein the plurality of network elements includes at least one gateway, at least one server, and at least one network.

5. The node of claim **4**, wherein the at least one network includes wired networks, wireless networks, and hybrid wired and wireless networks.

6. The node of claim **5**, wherein the at least one network comprises at least one of the Internet, local area networks, wide area networks, metropolitan area networks, and information service stations.

7. The node of claim **1**, wherein the node comprises at least one of a plurality of node types, wherein the plurality of node types includes at least one node of a first type and at least one node of a second type, wherein a first network having a first node density is assembled using the at least one node of a first type, wherein in a second network having a second node density is assembled using the at least one node of a second type, and wherein the second network is overlaid onto the first network.

8. The node of claim **4**, wherein code and data anticipated for future use are predistributed among a plurality of intercoupled network nodes using low priority messages, wherein the code and the data are downloadable from at least one of storage devices of the plurality network elements that includes the node, and storage devices that are not among the plurality of network elements.

9. The node of claim **4**, wherein the plurality of network elements automatically organize in response to information from the plurality of intercoupled network nodes, wherein automatically organizing comprises automatically controlling data transfer, processing, and storage within the network.

10. The node of claim **9**, wherein the at least one processor performs data processing using at least one processing hierarchy, the at least one processing hierarchy controlling at least one of data classifications, data transfers, data queuing, data combining, processing locations, and communications among the plurality of network elements.

11. The node of claim **10**, wherein data is transferred among the plurality of network elements using message packets, wherein the message packets are aggregated into compact forms in the node using message aggregation protocols, wherein the message aggregation protocols are adaptive to data type, node density, message priority, and available energy.

12. The node of claim **11**, wherein the message packets include decoy message packets, wherein information to be transferred is impressed on random message packets to limit access to the information to be transferred.

13. The node of claim **1**, wherein the functions of the node include data acquisition, data processing, communication, data routing, data security, and programming.

14. The node of claim **1**, wherein the plurality of APIs are coupled to control at least one of sensors, actuators, communications devices, signal processors, information storage devices, node controllers, and power supply devices, and wherein the plurality of APIs support remote reprogramming and control of the at least one device.

15. The node of claim **14**, wherein the plurality of APIs are layered.

16. The node of claim **14**, wherein the plurality of APIs enable distributed resource management by providing network resource information and message priority information to the plurality of network elements, wherein information transfer among the plurality of network elements is controlled using a synchronism hierarchy established in response to the resource information and message priority information.

17. The node of claim **14**, wherein the at least one preprocessor performs at least one of data acquisition, alert functions, and controlling at least one operating state of the node.

18. The node of claim **14**, wherein the at least one processor performs at least one of signal identification, database management, adaptation, reconfiguration, and security.

19. The node of claim **14**, wherein the at least one processor includes an industry standard operating system, and wherein the at least one processor is programmed by a high level program running on the remote computer.

20. The node of claim **19**, wherein the industry standard operating system is at least one of Windows CE, Linux, and QNX.

21. The node of claim **20**, wherein the high level program is in a high level programming language selected from a group comprising C, C++, and Java.

22. The node of claim **1**, wherein the node controls data processing and data transmission in response to a decision probability of a detected event.

23. The node of claim **1**, wherein the at least one sensor is at least one of seismic, acoustic, infrared, thermal, force, vibration, pressure, humidity, magnetic, visible light, acceleration, chemical, biological, particulate, current, and voltage sensors.