

CLAIMS

1. A communication system comprising:
- 5 a network interconnecting each of a first plurality of physical components residing on a second plurality of platforms, thereby to define a first plurality of network nodes, wherein plural components from among said first plurality reside on at least one platform P of said second plurality of platforms thereby to provide platform-component level communication of data between the plural components of platform P and other components from among said first plurality; and
- 10 at least one processor which comprises a node on the network, which receives data from at least a first component from among the first plurality of components, hosts a third plurality of applications that process the data, thereby to generate at least one processed data result, and provides said processed data result to at least a second component from among the first plurality of components, via said network,
- 15 thereby to provide data communication between plural platforms, each including plural physical components, at least at said physical component level.
2. A system according to claim 1 or any preceding claim wherein said data comprises information characterizing at least one capability of at least one individual component
- 20 on platform P which is sent to at least one component on a platform, from among said second plurality of platforms, other than P.
3. A system according to claim 1 or any preceding claim wherein said data comprises information gathered by at least one individual component on platform P which is sent
- 25 to at least one component on a platform, from among said second plurality of platforms, other than P.
4. A system according to claim 2 or claim 3 or any preceding claim wherein said data is provided via a component interface, which comprises a software driver and a
- 30 network connectivity interface, and which is in data communication with at least one processor serving said individual component.

5. A system according to claim 4 or any preceding claims wherein said interface comprises a radio frequency interface or another physical communication medium (e.g. landline Ethernet, fiber optics, standard avionic bus).
- 5 6. A system according to claim 5 or any preceding claim wherein said radio frequency interface is implemented in Software-Defined Radio (SDR), legacy radio, or SAT comm.
7. A system according to claim 1 or any preceding claim wherein said network
10 comprises a local area network (aka LAN) and/or wide area network (aka WAN).
8. A system according to claim 1 or any preceding claim wherein said data is received by the processor from each component from among the first plurality of components in a first component-specific format and wherein the processor uses data format,
15 which is predefined by a data dictionary, to share said data with other components, in a format other than said first component-specific format, thereby to create a distributed data cloud.
9. A system according to claim 8 or any preceding claim wherein the processor uses
20 the data dictionary to generate, for the said data, a structure, defined by the data dictionary, for sharing with other components via the network, and wherein all structures defined by the data dictionary are understandable by all of said first plurality of components.
- 25 10. A system according to claim 1 or any preceding claim wherein each component C of the first plurality of components decides topics to which component C would like to listen, based on at least one of earlier-defined rules or user actions.
- 30 11. A system according to claim 10 or any preceding claim, wherein, given a set of components S from the first plurality of components which are using an individual application from among said third plurality of applications, topics on which data sharing will occur between components in said set S are defined by said individual application.

12. A system according to claim 1 or any preceding claim wherein at least one individual application from among said third plurality of applications comprises a situational awareness application.
- 5 13. A system according to claim 1 or any preceding claim wherein all of said third plurality of applications are written using a single common data dictionary.
14. A system according to claim 8 or any preceding claim and also comprising data storage operative to accumulate data stored in the distributed data cloud and a server
10 with access to said storage.
15. A system according to claim 14 or any preceding claim and wherein said server is operative to perform big data analysis on data stored in said storage.
- 15 16. A system according to claim 15 or any preceding claim wherein said big data analysis drives predictive maintenance of at least one of said first plurality of components.
17. A system according to claim 14 or any preceding claim wherein said central or
20 distributed server is configured to plan tasks to be performed by a task force including at least one of said first plurality of components and, accordingly, to send task-relevant data stored in said central or distributed storage, to relevant components in said task force.
- 25 18. A system according to claim 1 or any preceding claim wherein at least one of said third plurality of applications comprises a platform-component level application which can be performed by a single component from among said first plurality of components.
- 30 19. A system according to claim 18 wherein said platform-component level application can be performed by each of at least two components, on at least two different respective platforms from among the second plurality of platforms.

20. A system according to claim 1 or any preceding claim wherein any component from among said first plurality of components, residing on an individual platform, can create a topic and share the topic with components, from among said first plurality of components, which reside on platforms, from among the second plurality of
5 platforms, other than said individual platform.

21. A system according to claim 1 or any preceding claim wherein any component from among said first plurality of components, residing on an individual platform, can create a topic and share the topic with other components, from among said first
10 plurality of components, which reside on said individual platform.

22. A system according to claim 1 or any preceding claim wherein the platform P comprises a vehicle and the processor is installed aboard the vehicle.

15 23. A system according to claim 1 or any preceding claim wherein data communication, between said plural platforms, is also provided at platform level.

24. A system according to claim 1 or any preceding claim wherein at least two logical entities such as a process or app are also connected via said network.
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25. A system according to claim 1 or any preceding claim wherein data also passes between at least first and second components both residing on a single platform, via an internal network aboard said single platform.

25 26. A system according to claim 1 which is self-forming, thereby to obviate any need to preplan or supervise the network.

27. A system according to claim 1 which is self-healing, such that even if a node N on said network fails, at least one message routed via said node N will still be
30 routed.

28. A system according to claim 1 wherein said network has routing and/or relay functionality.

29. A system according to claim 1 wherein said network provides basic visibility on physical or logical entities to all nodes interconnected by said network and also provides privileged visibility to only a subset of the nodes interconnected by said network.

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30. A system according to claim 1 wherein said network entitles all nodes interconnected by said network to perform a first set of actions on physical or logical entities and also entitles only a subset of the nodes interconnected by said network to perform a second set of actions.

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31. A system according to claim 1 wherein said data is secured by authentication logic which authenticates only nodes having an authorized unique identifier.

32. A system according to claim 8 or 9 wherein said data dictionary comprises a Base One International Corp Data Dictionary.

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33. A system according to claim 8 or 9 wherein said data dictionary comprises a metadata registry.

34. A system according to claim 33 wherein said metadata registry is ISO/IEC 11179 compliant.

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35. A system according to claim 33 wherein said metadata registry comprises an Oracle Enterprise Metadata Manager.

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36. A system according to claim 1 or any preceding claim wherein at least one component C of the first plurality of components decides on which topics each component in a group of components would like to listen, based on at least one of earlier-defined rules or user actions.

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37. A system according to claim 8 or any preceding claim and also comprising distributed data storage operative to accumulate data stored in the distributed data cloud and a distributed server with access to said distributed storage.

38. A system according to claim 1 wherein said network has forwarding and relay functionality.

39. A data communication method comprising:

5 Providing a network interconnecting each of a first plurality of physical components residing on a second plurality of platforms, thereby to define a first plurality of network nodes, wherein plural components from among said first plurality reside on at least one platform P of said second plurality of platforms thereby to provide platform-component level communication of data between the plural
10 components of platform P and other components from among said first plurality; and

Providing at least one processor which comprises a node on the network, which receives data from at least a first component from among the first plurality of components, hosts a third plurality of applications that process the data, thereby to generate at least one processed data result, and provides said processed data result to
15 at least a second component from among the first plurality of components, via said network,

thereby to provide data communication between plural platforms, each including plural physical components, at least at said physical component level.

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40. A computer program product, comprising a non-transitory tangible computer readable medium having computer readable program code embodied therein, said computer readable program code adapted to be executed to implement a data communication method comprising:

25 Providing a network interconnecting each of a first plurality of physical components residing on a second plurality of platforms, thereby to define a first plurality of network nodes, wherein plural components from among said first plurality reside on at least one platform P of said second plurality of platforms thereby to provide platform-component level communication of data between the plural
30 components of platform P and other components from among said first plurality; and

Providing at least one processor which comprises a node on the network, which receives data from at least a first component from among the first plurality of components, hosts a third plurality of applications that process the data, thereby to generate at least one processed data result, and provides said processed data result to

at least a second component from among the first plurality of components, via said network, thereby to provide data communication between plural platforms, each including plural physical components, at least at said physical component level.