CLAIMS:

1. A method of arrangement of centralized network motion controller (10) employing centralised topology having a plurality of remote units as system architecture comprising the steps of : (i) providing, using synchronised messages, all system and axes data to a processing unit, wherein the data is updated down to a control sampling rate and all the data items are available from each remote unit, (ii) the centralized processing unit performing behaviour control and multi axes profiling and motion control such as positon, velocity and current, (iii) synchronized messages from the centralized processing unit (10) are used to set the timing and to keep continuous synchronization of all units and to transfer the desired low level commands to the remote unit.

2. The method of arrangement of centralized network motion controller of Claim 1, wherein the low level commands include desired PWM command.

3. The method of arrangement of a centralized network motion controller as set forth in Claim 1, further comprising the step of measuring cables propagation delay and compensating for the delay by configuration of the remote or the master units.

4. The method of arrangement of a centralized network motion controller as set forth in Claim 1, further comprising the step of: using parallel/serial communication over the centralized communication link, by running few serial streams in parallel, to increase the communication bandwidth per given clock frequency.

5. The method of arrangement of a centralized network motion controller as set forth in Claim 1, further comprising the steps of: performing axes dependency algorithms and 3D error mapping as well as lock and events based on spatial positions.

6. The method of arrangement of a centralized network motion controller as set forth in Claim 1, further comprising the step of: embodying power supply from the master unit to the remote unit.

7. The method of arrangement of a centralized network motion controller as set forth in Claim 1, further comprising the step of: programmable/configurable connection of feedbacks and/or inputs and outputs directly within the centralized communication, over wires that are not used for the communication messages.

8. The method of arrangement of a centralized network motion controller as set forth in Claim 1, wherein remote power units have no need for the processing unit.

9. The method of arrangement of a centralized network motion controller as set forth in Claim 1, wherein a logic device is used to implement the centralized communication link, at both sides.

10. The method of arrangement of a centralized network motion controller as set forth in Claim 1, wherein a position feedback interface is typically implemented on the remote unit.

11. The method of arrangement of a centralized network motion controller as set forth in Claim 1, wherein the communication to/from remote units is partially daisy-chained.

12. The method of arrangement of a centralized network motion controller as set forth in Claim 1, wherein the communication for all the remote units is in parallel with the controller (10).

13. The method of arrangement of a centralized network motion controller as set forth in Claim 1, wherein the communication is half-duplex or full-duplex and bi-directional.

14. The method of arrangement of a centralized network motion controller as set forth in Claim 1, wherein the communication running synchronized messages are cyclic, and each burst has a specific task.

15. The method of arrangement of a centralized network motion controller as set forth in Claim 1, wherein the types of messages generated by the master controller (10) include synchronized messages and offline messages, and each remote unit also generates synchronized and offline messages to the master controller (10).

16. The method of arrangement of a centralized network motion controller as set forth in Claim 15, wherein the offline messages are being sent to configure the remote unit.

17. The method of arrangement of a centralized network motion controller as set forth in Claim 15, wherein the offline messages requires no specific timing or effects.

18. The method of arrangement of a centralized network motion controller as set forth in Claim 15, wherein the offline message from the remote unit to the master controller (10) is an immediate reply to the offline message from the master controller (10).

19. The method of arrangement of a centralized network motion controller as set forth in Claim 1, further comprising the steps of safety implementation to ensure not to perform any undesired activation of the remote unit, and keeping the remote units to be fully independent of each other.

20. The method of arrangement of a centralized network motion controller as set forth in Claim 1, further comprising the steps of: extending the scheme of a single master connected to a plural of remote units, into a scheme at which few masters are used, connected to each other over a centralized communication link, each with own remote units thereof.

21. The method of arrangement of a centralized network motion controller as set forth in Claim 1, wherein the method is without the use of EtherCat, overall system synchronization, independency between the axes in case of fault in one axis and immediate detection and response in case of such fault, both at the faulted axis level and at the system level.

22. A centralized network motion control system comprising
    (i) a master controller (10);
    (ii) a plurality of servo amplifiers (12A – 12D);
    (iii) a plurality of I/Os units (13A – 13B);
    (iv) a plurality of centralized communication links,
    (v) a plurality of remote units that accept the centralized communication link; and
    wherein a plurality of synchronized messages from the master controller (10) are used to set the timing and to keep continuous synchronization of and the servo amplifiers (12A – 12D) and I/Os units (13A – 13B) and to transfer desired PWM commands from the master controller (10) to the servo amplifier (12A – 12D), and the synchronized messages from each servo amplifiers (12A – 12D) are sent as a response to transfer all sampled data.