CLAIMS

1. An interface unit providing an interface between a control and sensor system of an assisted vessel with thrust capabilities and a master dynamic positioning system, wherein the master dynamic positioning system is configured to control a number of auxiliary vessels as one unit and control the thrust capabilities of the assisted vessel for assisting in manoeuvring of the assisted vessel, wherein the interface unit is configured to transmit commands from the master dynamic positioning system to the control and sensor system of the assisted vessel to control the thrust capabilities of the assisted vessel and wherein the interface unit is configured to transmit information from the control and sensor system of the assisted vessel to the master dynamic positioning system, wherein the information from the control and sensor system of the assisted vessel transmitted to the master dynamic positioning system includes at least one of:
- a rudder angle of the assisted vessel,
- a pitch angle of the controllable pitch propeller (CPP) of the assisted vessel,
- a propeller revolutions per minute (RPM) of the assisted vessel,
- an engine revolutions per minute (RPM) of the assisted vessel,
- an engine power of the assisted vessel,
- a thruster angle of the assisted vessel,
- a thruster revolutions per minute (RPM) of the assisted vessel, or
- a thruster power of the assisted vessel.

~~2. Interface unit according to claim 1, wherein the interface unit is adapted to transmit information from a control and sensor system of the assisted vessel to the master dynamic positioning system.~~

~~3~~2. Interface unit according to claim 1 ~~or claim 2~~, further comprising an inertial navigation system.

~~4~~3. Interface unit according to claim ~~3~~2, wherein the inertial navigation system comprising a global positioning system and a motion reference unit.

~~5~~4. Interface unit according to one of claims 1-~~4~~3, wherein the master dynamic positioning system is placed on one of the auxiliary vessels or on a land based facility.

~~6. Interface unit according to one of claims 2-5, wherein the information from the control and sensor system of the assisted vessel transmitted to the master dynamic positioning system includes at least one of:~~
~~- a rudder angle of the assisted vessel,~~
~~- a pitch angle of the controllable pitch propeller (CPP) of the assisted vessel,~~
~~- a propeller revolutions per minute (RPM) of the assisted vessel,~~
~~- an engine revolutions per minute (RPM) of the assisted vessel,~~
~~- an engine power of the assisted vessel,~~
~~- a thruster angle of the assisted vessel,~~
~~- a thruster revolutions per minute (RPM) of the assisted vessel, or~~
~~- a thruster power of the assisted vessel.~~

~~7~~5. Interface unit according to one of claims ~~2~~1-~~6~~ 4 wherein the information from the control and sensor system of the assisted vessel transmitted to the master dynamic positioning system includes at least one of:
- global position of the assisted vessel,
- a speed of the assisted vessel,
- a heading of the assisted vessel, or
- automatic identification system (AIS) assisted parameters such as geometry and load conditions.

~~8~~6. Interface unit according to one of claims 1-~~7~~5, wherein the interface unit is portable.

~~9~~7. Interface unit according to one of claims 1-~~8~~6, wherein the interface unit is easily connectable to the control and sensor systems on board the assisted vessel.

~~10. Interface unit according to one of claims 1-9, wherein the interface unit is configured to transmit commands from the master dynamic positioning system to~~

~~the control and sensor system of the assisted vessel to control the thrust capabilities of the assisted vessel~~.

~~11~~8. Interface unit according to one of claims 1-~~9~~6, wherein the interface unit is configured to enable human control of the master dynamic positioning system.

~~12~~9. Interface unit according to claim ~~11~~8, where human control comprises commands from a ship captain, a pilot, a tug master or shore based operators.

~~13~~10. Interface unit according to one of claims 1-~~12~~9, wherein the interface unit is configured to provide audio or visual commands to a crew on board the assisted vessel for control by the crew of the thrust capabilities of the assisted vessel.

~~14~~11. Interface unit according to one of claims ~~2~~1-~~13~~10, further comprising a communication module configured to communicate with the control and sensor system on board the assisted vessel.

~~15~~12. Interface unit according to one of claims 1-~~14~~11, further comprising a dynamic positioning interface module configured to communicate with the master dynamic positioning system.

~~16~~13. Interface unit according to one of claims 1-~~15~~12, further comprising a conversion module configured for converting signals from the control and sensor system on board the assisted vessel to signals understandable by the master dynamic positioning system.

~~17~~14. Interface unit according to claim ~~16~~13, wherein the conversion module further comprising a database with conversion information between the control and sensor system on board the assisted vessel and the master dynamic positioning system.

~~18~~15. Interface unit according to ~~-~~claim ~~14~~11, wherein the communication module is connectable to the assisted vessel control and sensor system via a cable based or wireless connection.

~~19~~16. Interface unit according to claim ~~18~~15, wherein the wireless connection is at least one of satellite, antennae or radio signals.

~~20~~17. Interface unit according to claim ~~18~~ 15 or ~~19~~16, wherein the wireless connection is a secure connection.

~~21~~18. Interface unit according to one of claims ~~15~~12-~~19~~17, wherein a secure connection is implemented in the communication between at least one of:
- the dynamic positioning interface module and the master dynamic positioning system,
- the dynamic positioning interface module and the control and sensor system of the assisted vessel, or
- the master dynamic positioning system and the auxiliary vessels.

~~22~~19. Interface unit according to one of claims 1- ~~21~~18, wherein the thrust capabilities comprises at least one of a rudder, a propeller, an azimuthing thruster, a waterjet, or a tunnel thruster.

~~23~~20. Interface unit according to one of claims 1-~~22~~19, wherein the auxiliary vessels are tugboats.

~~24~~21. A master dynamic positioning system comprising an interface unit according to one of claims 1-~~23~~20.

~~25~~22. A master dynamic positioning system according to claim ~~24~~21, wherein the dynamic positioning control system is configured to control the auxiliary vessels and the thrust capabilities of the assisted vessel based on a plurality of input parameters, the plurality of input parameters comprise at least one of:
- speed of the assisted vessel,
- heading of the assisted vessel,
- position of the assisted vessel,
- surface traffic,
- meteorological data,

- environmental data,
- speed of the auxiliary vessels,
- heading of the auxiliary vessels,
- position of the auxiliary vessels,
- wire, rope tension or winch capacity of the auxiliary vessels, or
- electronic navigational charts.

~~26~~23. A system for assisting in manoeuvring of an assisted vessel with thrust capabilities the system comprising:

- a master dynamic positioning system ~~according to one of claims 24 or 25~~ controlling a number of auxiliary vessels as one unit for assisting in manoeuvring of the assisted vessel, and
- an interface unit according to one of claims 1-20.

~~27~~24. A method for assisting in manoeuvring of a vessel with thrust capabilities, the method comprising:

- controlling a number of auxiliary vessels as one unit for assisting in manoeuvring of the assisted vessel by controlling a dynamic positioning system of each of the auxiliary vessels by a master dynamic positioning system, and
- controlling the thrust capabilities of the assisted vessel by the master dynamic positioning system wherein the master dynamic positioning system is provided with an interface unit enabling control of the thrust capabilities on board the assisted vessel, wherein the interface unit is configured to transmit commands from the master dynamic positioning system to a control and sensor system of the assisted vessel to control the thrust capabilities of the assisted vessel, and
- receiving by the master dynamic positioning system control and sensor information from the control and sensor system of the assisted vessel via the interface unit, wherein the information from the control and sensor system of the assisted vessel transmitted to the master dynamic positioning system includes at least one of:
- a rudder angle of the assisted vessel,
- a pitch angle of the controllable pitch propeller (CPP) of the assisted vessel,
- a propeller revolutions per minute (RPM) of the assisted vessel,
- an engine revolutions per minute (RPM) of the assisted vessel,

- an engine power of the assisted vessel,
- a thruster angle of the assisted vessel,
- a thruster revolutions per minute (RPM) of the assisted vessel, or
- a thruster power of the assisted vessel.

~~28. Method according to claim 27, wherein the master dynamic positioning system is provided with an interface unit enabling control of the thrust capabilities on board the assisted vessel.~~

~~29. Method according to claim 28, further comprising receiving by the master dynamic positioning system control and sensor information from the assisted vessel via the interface unit.~~

~~30~~25. Method according to claim ~~28~~ 24~~or claim 29~~, further comprising placing the interface unit on the assisted vessel.

~~31~~26. Method according to one of claims ~~28~~24~~-~~ or ~~30~~25, comprising receiving by the master dynamic positioning system information from an inertial navigation system provided in the interface unit.

~~32~~27. Method according to claim ~~31~~26, wherein the inertial navigation system comprises a global positioning system and a motion reference unit.

~~33~~28. Computer program for performing the method according to one of claims ~~27~~ 24 - ~~32~~27.

~~34~~29. A tugboat provided with a master dynamic positioning system, wherein the master dynamic positioning system is adapted to control a number of tugboats as one unit for assisting in manoeuvring of an assisted vessel having thrust capabilities and to control the thrust capabilities on board the assisted vessel, wherein the master dynamic positioning system is connectable to an interface unit according to one of claims 1-20 enabling control of the thrust capabilities on board the assisted vessel.

~~35. A tugboat according to claim 34, wherein the master dynamic positioning system is connectable to an interface unit enabling control of the thrust capabilities on board the assisted vessel.~~

~~36. A tugboat according to claim 35, wherein theinterface unit is according to one of claims 1-23.~~