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(54) **Title:** METHOD, COMPUTER PROGRAM, APPARATUSES, AND SYSTEM FOR DETERMINING AVAILABLE RESOURCES AND TASKING A SELECTION OF THE RESOURCES
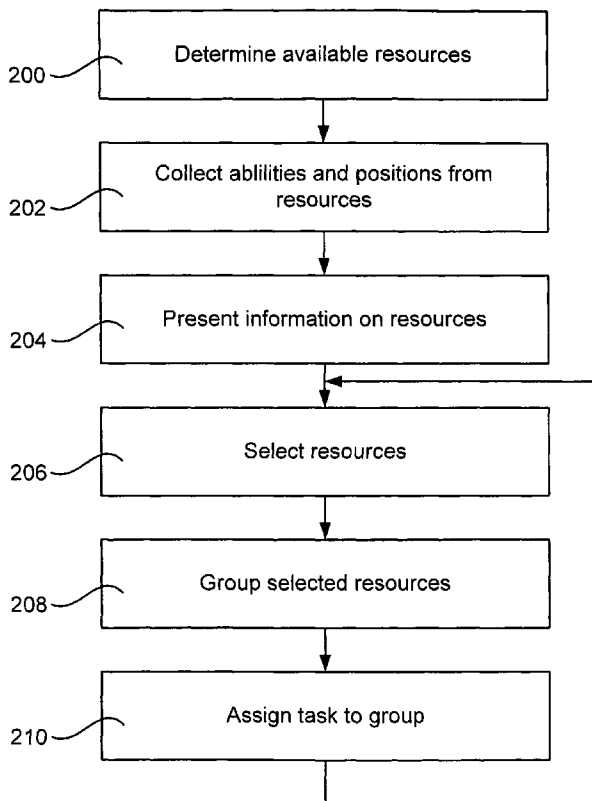
(57) **Abstract:** There is disclosed a method for determining avail¬ able resources and tasking a selection of said resources by a processing means disposed to interact with remote processing means, comprising determining at least two resources, each comprising processing means disposed to interact with remote processing means and each resource having capability of performing physical measures; collecting information from each determined resource; presenting collected information on determined resources to a user; enabling selection of a plurality of said at least two resources; grouping selected resources accord¬ ing to said selection into a group; and assigning a task to said group. A computer program, apparatuses and a system for implementing the determination of available resources and assignment of tasks to a selection of said resources are also disclosed.

METHOD, COMPUTER PROGRAM, APPARATUSES, AND SYSTEM FOR
DETERMINING AVAILABLE RESOURCES AND TASKING A SELECTION
OF THE RESOURCES

Technical field
        The present invention relates to a method, computer
program, apparatuses, and system for determining avail-
able resources and tasking a selection of the resources.
5   Background of the invention
        Situational awareness is more or less always an
issue for people and organisations. This becomes even
more important when it comes to organisations comprising
a larger number of entities, since the situation requires
10   a very fast growing co-ordination work as the number of
entities grows. Situational awareness also becomes more
important when it comes to emergency situations, where
correct and swift actions are to be taken, but stress and
unforeseeable situations, which are significant for
15   emergency situations, will make this difficult. When it
comes to organisations with a larger number of entities,
which organisations are disposed to take care of emergen-
cy situations, the difficulty of the situation awareness
is obvious.
20   There has been attempts for improving situation
awareness, e.g. among military organisations. An example
of this is a project of the U.S. Army called Force XXI
Battle Command Brigade and Below (FBCB2) program. Another
example is Benefon Commander NT, which is a cellular
25   telephone with functions helping a user to assign tasks,
receive status messages and send a unit for help when
needed, and is designed for work control use. It is
especially suited for e.g. group leaders in security
firms, construction fields, emergency services and for
30   military use. Through these examples of tools for situa-
tion awareness, a user can get position data of multiple
entities. They also provide status reporting from remote

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entities. Thus the user will get an improved information situation. However, there is still an issue for a user in a situation where stress and unforeseeable situations disturb, and very much information among a large number
5   of entities have to be handled correctly and swiftly. Therefore, it is a problem to provide a wanted effect by available resources.

Summary of the invention

In view of the above, an objective of the invention
10 is to solve or at least reduce the problems discussed above. In particular, an objective is to provide a method, an apparatus, and a system for distribution of information enabling any entity to collect information from, provide information to, and command other entities.
15   According to a first aspect of the present invention, there is provided a method for determining available resources and tasking a selection of said resources by a processing means disposed to interact with remote processing means, comprising the steps of:
20   determining at least two resources, each comprising processing means disposed to interact with remote processing means and each resource having capability of performing physical measures;
        collecting information from each determined resour-
25 ce;
        presenting collected information on determined resources to a user;
        enabling selection of a plurality of said at least two resources;
30   grouping selected resources according to said selection into a group; and
        assigning a task to said group.
        The collected information may comprise ability, position, state, sensor information, or user input infor-
35 mation, or any combination thereof. The method may further comprise relaying the collected information to at least one resource. The method may further comprise the

steps of: determining organic information; and sending
the organic information to other resources. The term
"organic information" should in this context be construed
as information acquired by the apparatus locally, e.g.
from sensors or by input by a user. The organic informa-
tion may comprise ability, position, state, sensor infor-
mation, or user input information, or any combination
thereof. The method may further comprise the steps of:
processing the collected information and the determined
organic information to provide aggregated information on
a situation; and sending the aggregated information on
the situation to other resources.

This enables a swift way of selecting the right
resources based on relevant information, and to assign
these resources a task. Further, when the method accord-
ing to the first aspect of the present invention is
performed on a plurality of entities, e.g. all entities
associated to the resources, coherent information on all
resources are provided on each entity, which in turn not
only enables a swift way of selecting the right resources
based on relevant information, and to assign these re-
sources a task, but also provides a robust network based
information distribution and command ability. This is
particularly relevant e.g. for fire fighting operations,
rescue teams, operations by the coast guard, military
operations, actions by the police, or operations in
connection with any emergency situation. Another advan-
tage of the method according to the first aspect of the
present invention is revealed within logistics. For
example when a plurality of vessels, vehicles, or air-
craft are to be manoeuvered as a group, the present
invention provides abilities to facilitate this. Further,
if these kinds of manoeuvres are to be performed auto-
nomously by groups of entities, such as groups of robot
vehicles in production industry, robot vessels performing
operations where no personnel is able to be on board, or
unmanned aerial vehicles, the method is found very advan-

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tageous, where the group may be able to compensate for
upcoming limitations in resources associated to any of
the entities with redundant resources or abilities from
any of the other available resources due to the informa-
tion sharing among the entities. Thus, improved robust-
ness in sense of ability and availability is provided.

The method may further comprise the steps of:

enabling a second selection of a plurality of said
at least two resources;

grouping selected items according to said second
selection into a second group; and

assigning a second task to said second group.

An advantage of this is that it enables available
resources to be divided between different tasks, e.g.
when there is two different emergency situations, or if
two different tasks can be defined in a single situation.
Of course, more than two tasks, two groups, etc. are
possible in a similar way.

The step of presenting may comprise a presentation
of indications related to said at least two resources on
a two-dimensional representation of an environment in
which said at least two resources are present. Alterna-
tively, the step of presenting may comprise a presenta-
tion of indications related to said at least two re-
sources in a three-dimensional representation of an
environment in which said at least two resources are
present. The three-dimensional representation may be
based on a perspective view on a two-dimensional display,
or be based on stereoscopic viewing. The selection may
comprise the step of interacting graphically with a
representation of an element to be selected.

The grouping may further comprise establishing
communication between said selected resources of said
group.

The method may further comprise repeating said step
of collecting ability information and position informa-
tion, and said step of presenting collected information.

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An advantage of this is that recent information is pre-
sented, which of course is relevant if any decisions is
to be taken. This is particularly relevant in the example
of an emergency situation.

5   According to a second aspect of the present in-
vention, there is provided a computer program comprising
program code, which when downloaded and executed on a
computer is adapted to perform the method according to
the first aspect of the invention.

10   According to a third aspect of the present in-
vention, there is provided an apparatus for determining
available resources and tasking a selection of said
resources, comprising
            a processing means;

15   a communication means; and
            a user interface,
            wherein said processing means is disposed to receive
information by said communication means from at least two
resources,

20   wherein said user interface is disposed to present
said information to a user, and to provide selection
means for enabling selection of a plurality of resources,
            wherein said processing means is further disposed to
assign a group of resources upon selection, and assign a

25 task to said group,
            wherein said communication means is disposed to send
information on said task to resources of said group.
            The received information may comprise ability,
position, state, sensor information, or user input

30 information, or any combination thereof. The communica-
tion means may be disposed to relay the received infor-
mation to at least one resource. The apparatus may
further comprise means for determining organic informa-
tion, wherein the communication means then may be dis-

35 posed to send the organic information to other resources.
The organic information may comprise ability, position,
state, or sensor information acquired by means for

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acquiring information of the apparatus, or user informa-
tion input by means of the user interface, or any combi-
nation thereof. The processing means may be disposed to
process the received information and the determined

5   organic information to provide aggregated information on
a situation, and the communication means may then be
disposed to send the aggregated information on the
situation to other resources.

The apparatus may further be disposed to enable a

10   second selection of a plurality of said at least two
resources; group selected items according to said second
selection into a second group; and assign a second task
to said second group.

The user interface may comprise a display providing

15   indications related to said at least two resources on a
two-dimensional representation of an environment in which
said at least two resources are present.

Alternatively, the user interface may comprise a
display providing indications related to said at least

20   two resources in a three-dimensional representation of an
environment in which said at least two resources are
present. The three-dimensional representation may be
based on a perspective view on said display, or on
stereoscopic viewing. The selection may be enabled by the

25   user interface by means for interacting graphically with
a representation of an element to be selected.

The apparatus may further comprise a communication
handler for establishing communication between said
selected resources of said group.

30   The information and position information may be
repeatedly updated and presented by said user interface.

According to a fourth aspect of the present in-
vention, there is provided an apparatus for a resource
comprising a processing means; and a communication means,

35   wherein said processing means is disposed to determine
information on said resource, and said communication
means is disposed for sending information on the deter-

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mined information, and wherein said communication means
is disposed for receiving information on assigned task
and grouping of said resource, and said processing means
is disposed to adapt behaviour of said resource according
5   to said received assigned task and grouping.

        The communication means may be disposed to relay the
received information on the assigned task to at least one
resource indicated in the grouping information. The
apparatus may further comprise means for determining
10   organic information, wherein the communication means then
may be disposed to sent the organic information to other
resources. The organic information may comprise ability,
position, state, or sensor information, or any combina-
tion thereof, acquired by means of the apparatus for
15   acquiring information.

        According to a fifth aspect of the present in-
vention, there is provided a system comprising a plura-
lity of apparatuses according the third aspect and/or
apparatuses according to the fourth aspect of the present
20   invention, wherein information held by any of the appara-
tuses is shared with the other apparatuses.

        Advantages of the second to fifth aspect of the
present invention are similar to those discussed in con-
nection with the first aspect of the invention.

25   Generally, all terms used in the claims are to be
interpreted according to their ordinary meaning in the
technical field, unless explicitly defined otherwise
herein. All references to "a/an/the [element, device,
component, means, step, etc]" are to be interpreted
30   openly as referring to at least one instance of said
element, device, component, means, step, etc., unless
explicitly stated otherwise. The steps of any method
disclosed herein do not have to be performed in the exact
order disclosed, unless explicitly stated.

35   Other objectives, features and advantages of the
present invention will appear from the following detailed

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disclosure, from the attached dependent claims as well as
from the drawings.

Brief description of the drawings

The above, as well as additional objects, features
5   and advantages of the present invention, will be better
understood through the following illustrative and non-
limiting detailed description of preferred embodiments of
the present invention, with reference to the appended
drawings, where the same reference numerals will be used
10   for similar elements, wherein:

Fig. 1 is a schematic diagram of at least a part of
a system according to an embodiment of the present in-
vention; and

Fig. 2 is a flow chart illustrating a method
15   according to an embodiment of the present invention.

Detailed description of preferred embodiments

Fig. 1 schematically illustrates a number of appa-
ratuses 102, 104, 106, 108, 110 in a system 100. Each
apparatus 102, 104, 106, 108, 110 is associated to a re-
20   source and comprises at least a processing means, which
comprises storage capacity for information to be pro-
cessed, and a communication means. A resource is an
entity with an ability. The entity can for example be an
ambulance and an ability of the ambulance can be defib-
25   rillator capacity. The resource can also be considered as
a complex entity that might change over time, such as a
vehicle and personnel in the vehicle being a resource
associated to an apparatus, and when the personnel moves
over to another vehicle with, to a stationary location,
30   or is operating without the vehicle with the apparatus,
the resource associated to the apparatus is considered to
change over time. The entity is also associated with a
position, which for example can be determined by a GPS
receiver on the entity. The entity can also be a pure
35   central for managing other resources, which then is the
ability of the entity. The entity can also be stationary,
thus, the position of the entity is given without any

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special positioning arrangements. A particular feature of
the system 100 is that it enables a non-hierarchical
network between the apparatuses 102, 104, 106, 108, 110,
which provides for distributed coherent information sha-
5   ring about the resources, which in turn enables provision
of groups of resources to perform tasks. Here, it should
be noted that the expression "coherent information" is to
be construed openly, since information propagation time
through the network of apparatuses is to be considered as
10   non-zero. However, information is handled and distributed
as fast as technically feasible between the apparatuses
102, 104, 106, 108, 110, which implies that the appara-
tuses are working with more or less common attributes
with common values. Furthermore, operations performed by
15   each resource provides new information, which in turn is
distributed, since all apparatuses are enabled to provide
and share information. Besides the information sharing,
each entity is also enabled to give tasks, which provides
for a significant flexibility, and thus improved robust-
20   ness of the entire system 100.

        The processing means of an apparatus of an entity is
disposed to keep track on the abilities of the entity,
and the communication means is disposed to send informa-
tion on the abilities. The communication means is further
25   disposed to send position information, receive informa-
tion on tasks given to the entity, and also receive in-
formation on which other entities to co-operate with on
said task. Other information can also be communicated to
and/or from the entity by the communication means. The
30   communication means can be arranged to establish communi-
cation over one or several communication channels, and be
able to communicate via one or several communication net-
works, where the several communication networks can use
different communication techniques. Information can thus
35   be linked between apparatuses, and also between different
types of communication networks. Preferable communication
approaches of the present invention are broadcast and

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multicast. The ability to use an arbitrary mix of commu-
nication technologies, including wired and wireless
technologies, is illustrated in Fig. 1 by links between
communication means of the apparatuses 102, 104, 106,

5   108, 110 having different line patterns and form. Con-
sidering all these communication abilities, further
robustness is brought to the system 100.

A tool for a user for managing a plurality of re-
sources, which further enables a user manage the re-

10   sources swiftly and correct, is provided in e.g. appa-
ratus 102. All of the apparatuses 102, 104, 106, 108, 110
are disposed to send information on e.g. their position
and abilities of their associated resource. Thus, appa-
ratus 102 is able to receive information on positions and

15   abilities of each of the resources associated to appara-
tuses 104, 106, 108, 110, either by direct communication
as depicted from apparatuses 104 and 106, or relayed in
one or more steps as depicted from apparatuses 108 and
110. Information on the determined available resources is

20   then presented to a user. The user is then able to select
a plurality of the resources and form a group of resour-
ces. The group can then be assigned a task, and informa-
tion on the grouping and the task is communicated to at
least the resources of the group. For example, if re-

25   sources associated to apparatuses 104, 106, 108 are
selected to form a group and are given a task by using
apparatus 102 for managing grouping and tasking, infor-
mation on resources of the group and the task is com-
municated by apparatus 102 to apparatuses 104, 106, 108,

30   and then the resources associated to apparatuses 104,
106, 108 will start working on solving the task. This
information can also be communicated by apparatus 102 to
apparatus 110 if that is determined to be necessary or
advantageous. When the task is solved, the group can be

35   broken up, thus making the resources available for new
groups and tasks. This can also be made upon receiving

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new information to form another group, whereby the old group is broken up and the new one is formed.

As depicted in Fig. 1, the apparatuses can be equipped with a user interface, if that is the nature of
5   the resource. Some resources are of the nature that it is pure machine-to-machine communication. An example on this is an autonomous robot that will get its instructions from the task, and then just perform actions according to the instructions. This is also applicable to groups of
10 robots working autonomously together. In this context, a robot is to be construed as a machine capable to carry out complex series of actions automatically. The series of actions can be adaptively controlled by the machine to make it autonomous.
15   The user interface can comprise means for visual, tactile, and/or audio presentation of information. Visually presented information is normally provided by some type of display means. Three-dimensional visual presentation can be provided, for example by perspective
20 representation on a two-dimensional display, or by stereoscopic viewing. Alternatives for rendering more than two dimensions on a two-dimensional display is to provide several two-dimensional views to a user. The representation of the resources can be provided by
25 symbols indicating positions and/or capabilities of the resources. Indication of positions can be performed by displaying indications of the resources on a repre-sentation of an environment in which the resources are present, e.g. a map, floorplan, etc.
30   Examples on resources can be a fireman, a paramedic, a fire engine, a fire officer, an ambulance, a policeman, a patrol car, a soldier, a combat vehicle, an aircraft, a vessel, a command central, etc. Examples on the apparatus associated with the resource can be any device with
35 computational power and communication means, such as a computer or a personal digital assistant with communica-tion interface, a mobile phone, an embedded computer

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provided with communication capabilities, etc. The size
and complexity of the resource do of course influence
what type of apparatus that is suitable for the par-
ticular resource.

5   Communication between the apparatuses, which appa-
ratuses can be associated to stationary or mobile re-
sources, can be wired and/or wireless, and can utilise
one or more communication networks and/or be direct
communication between the apparatuses. The communication

10 network can be a so called ad hoc network, which is a
self-configuring network of entities with communication
capabilities connected by communication links to form an
arbitrary topology. The communication network can also be
a network where communication is relayed by communication

15 network devices of a communication system, such as a
cellular system or a satellite based communication
system.

        The above discussed information sharing implies that
each entity will gain more information. In addition to

20 this, apparatuses of the entities can have further
available information, e.g. from its own sensors, or so
called organic information, i.e. information acquired by
the entity itself, which also can include information
input by a user. Examples of organic information in an

25 entity are abilities, position, state, sensor informa-
tion, user input information, etc. This information can
now be shared with the other entities.

        Fig. 2 is a flow chart illustrating a method
according to the present invention. In a determination

30 step 200, available resources are determined. This is
preferably performed by communication with or from the
available resources. In this communication, abilities and
positions of the available resources are collected in an
information collection step 202. In Fig. 2, this is

35 illustrated as a step in a sequence, but is preferably
updated repeatedly to be able to gain advantage of
relevant and actual information on the resources. Infor-

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mation on the resources are presented in an information presentation step 204. The presentation of information is discussed above together with the disclosure of the user interface. Among the presented available resources, a

5   number of resources are selected in a resource selection step 206. The selected resources are then grouped into a group in a resource grouping step 208, and a task is assigned to the group of resources in a task assignment step 210. The task is then communicated, as discussed

10 with reference to Fig. 1. The selection step 206, resource grouping step 208, and task assignment step 210 can be repeated if further groups and tasks are to be assigned. The method has been illustrated as a sequence of steps, but can be carried out in any order or

15 parallelly, as long as data required for the particular step is available. The method is suitable for implementation in a computer program having program code for performing the method when executed on a computer, e.g. a computer as any of those described with reference to Fig.

20 1.

The invention has mainly been described above with reference to a few embodiments. However, as is readily appreciated by a person skilled in the art, other embodiments than the ones disclosed above are equally possible

25 within the scope of the invention, as defined by the appended patent claims.

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CLAIMS

1. Method for configuring a distributed and at least initially non-hierarchic system by a processing means of an apparatus associated with one of a plurality of re-sources of said system disposed to interact with remote processing means of apparatuses associated with other resources of said system, comprising the steps of:

determining at least two available resources, each being associated with an apparatus comprising processing means disposed to interact with remote processing means and each resource having capability of performing phy-sical measures;

collecting information from each determined resource to provide coherent information on said resources, said information comprising ability of said each resource;

enabling selection of a plurality of said at least two resources;

grouping selected resources according to said selec-tion into a group; and

assigning a task to said group.

2. The method according to claim 1, further compris-ing presenting collected information on determined re-sources to a user.

3. The method according to claim 1 or 2, wherein said selection of resources and assignment of task depend on said collected information.

4. The method according to any of claims 1 to 3, wherein the collected information comprises ability, position, state, sensor information, or user input infor-mation, or any combination thereof.

5. The method according to any of claims 1 to 4, further comprising relaying the collected information to at least one resource.

6. The method according to any of claims 1 to 5, further comprising the steps of:

determining organic information; and

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sending the organic information to other resources.

7. The method according to claim 6, wherein the organic information comprises ability, position, state, sensor information, or user input information, or any combination thereof.

8. The method according to claim 6 or 7, further comprising the steps of:

processing the collected information and the determined organic information to provide aggregated information on a situation; and

sending the aggregated information on the situation to other resources.

9. The method according to any of claims 1 to 8, further comprising the steps of:

enabling a second selection of a plurality of said at least two resources;

grouping selected items according to said second selection into a second group; and

assigning a second task to said second group.

10. The method according to any of claims 1 to 9, wherein said step of presenting comprises a presentation of indications related to said at least two resources on a two-dimensional representation of an environment in which said at least two resources are present.

11. The method according to any of claims 1 to 10, wherein said step of presenting comprises a presentation of indications related to said at least two resources in a three-dimensional representation of an environment in which said at least two resources are present.

12. The method according to claim 11, wherein said three-dimensional representation is based on a perspective view on a two-dimensional display.

13. The method according to claim 11, wherein said three-dimensional representation is based on stereoscopic viewing.

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14. The method according to any of claims 11 to 13, wherein the selection comprises interacting graphically with a representation of an element to be selected.

15. The method according to any of claims 1 to 14, wherein said grouping further comprises establishing communication between said selected resources of said group.

16. The method according to any of claims 1 to 15, further comprising repeating said step of collecting information and said step of presenting collected information.

17. A computer program comprising program code, which when downloaded and executed on a computer is adapted to perform the method according to any of claims 1 to 16.

18. An apparatus for configuring a distributed and at least initially non-hierarchic system, the apparatus comprising

a processing means; and

a communication means,

wherein said processing means is disposed to:

receive information by said communication means from other apparatuses associated with at least two resources of said system, respectively, to provide coherent information on said resources, wherein said information comprises abilities of each of said at least two resources,

provide selection means for enabling selection of a plurality of resources from said at least two resources, and

assign a group of resources upon selection, and assign a task to said group, and

wherein said communication means is disposed to send information on said task to apparatuses associated with resources of said group.

19. The apparatus according to claim 18, further comprising a user interface, wherein said user interface is disposed to present said coherent information to a user.

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20. The apparatus according to claim 18 or 19, wherein said selection of resources and assignment of task depend on said coherent information.

21. The apparatus according to any of claims 18 to 20, wherein the received information comprises ability, position, state, sensor information, or user input information, or any combination thereof.

22. The apparatus according to claim 18 to 21, wherein the communication means is disposed to relay the received information to at least one resource.

23. The apparatus according to any of claims 18 to 22, further comprising means for determining organic information, wherein the communication means is disposed to send the organic information to other resources.

24. The apparatus according to claim 23, wherein the organic information comprises ability, position, state, or sensor information , or any combination thereof, acquired by means of the apparatus for acquiring information, or user information input by means of the user interface, or any combination thereof.

25. The apparatus according to claim 23 or 24, wherein the processing means is disposed to process the received information and the determined organic information to provide aggregated information on a situation, and the communication means is disposed to send the aggregated information on the situation to other resources.

26. The apparatus according to any of claims 18 to 25, further being disposed to enable a second selection of a plurality of said at least two resources; group selected items according to said second selection into a second group; and assign a second task to said second group.

27. The apparatus according to any of claims 18 to 26, wherein said user interface comprises a display providing indications related to said at least two resources on a two-dimensional representation of an

environment in which said at least two resources are
present.

28. The apparatus according to any of claims 18 to
26, wherein said user interface comprises a display
5 providing indications related to said at least two
resources in a three-dimensional representation of an
environment in which said at least two resources are
present.

29. The apparatus according to claim 28, wherein
10 said three-dimensional representation is based on a per-
spective view on said display.

30. The apparatus according to claim 28, wherein
said three-dimensional representation is based on
stereoscopic viewing.

15 31. The apparatus according to any of claims 27 to
30, wherein the selection is enabled by the user
interface by means for interacting graphically with a
representation of an element to be selected.

32. The apparatus according to any of claims 18 to
20 31, further comprising a communication handler for
establishing communication between said selected
resources of said group.

33. The apparatus according to any of claims 18 to
32, wherein said information is repeatedly updated and
25 presented by said user interface.

34. An apparatus for a resource comprising
a processing means; and
a communication means,
wherein said processing means is disposed to deter-
30 mine information on said resource, and said communication
means is disposed for sending the determined information,
and
wherein said communication means is disposed for
receiving information on assigned task and grouping of
35 said resource, and said processing means is disposed to
adapt behaviour of said resource according to said rece-
ived assigned task and grouping.

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35. The apparatus according to claim 34, wherein the communication means is disposed to relay the received information on assigned task to at least one resource indicated in the grouping information.

36. The apparatus according to any of claims 34 or 35, further comprising means for determining organic information, wherein the communication means is disposed to send the organic information to other resources.

37. The apparatus according to claim 36, wherein the organic information comprises ability, position, state, or sensor information, or any combination thereof, acquired by means of the apparatus for acquiring information.

38. A system comprising a plurality of apparatuses according to any of claims 18 to 33 or 34-37, wherein information held by any of the apparatuses is shared with the other apparatuses.
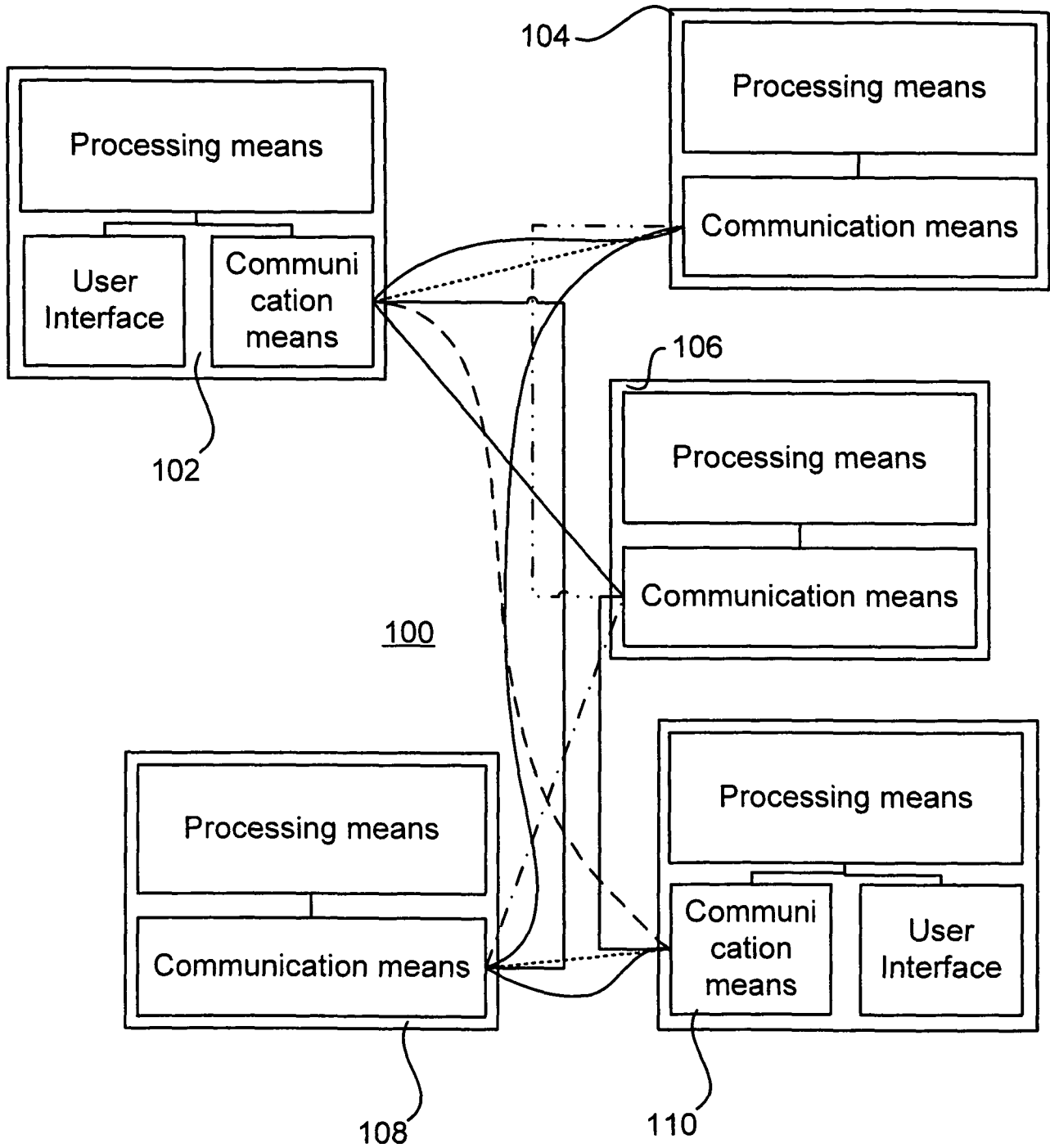
Fig. 1

2/2
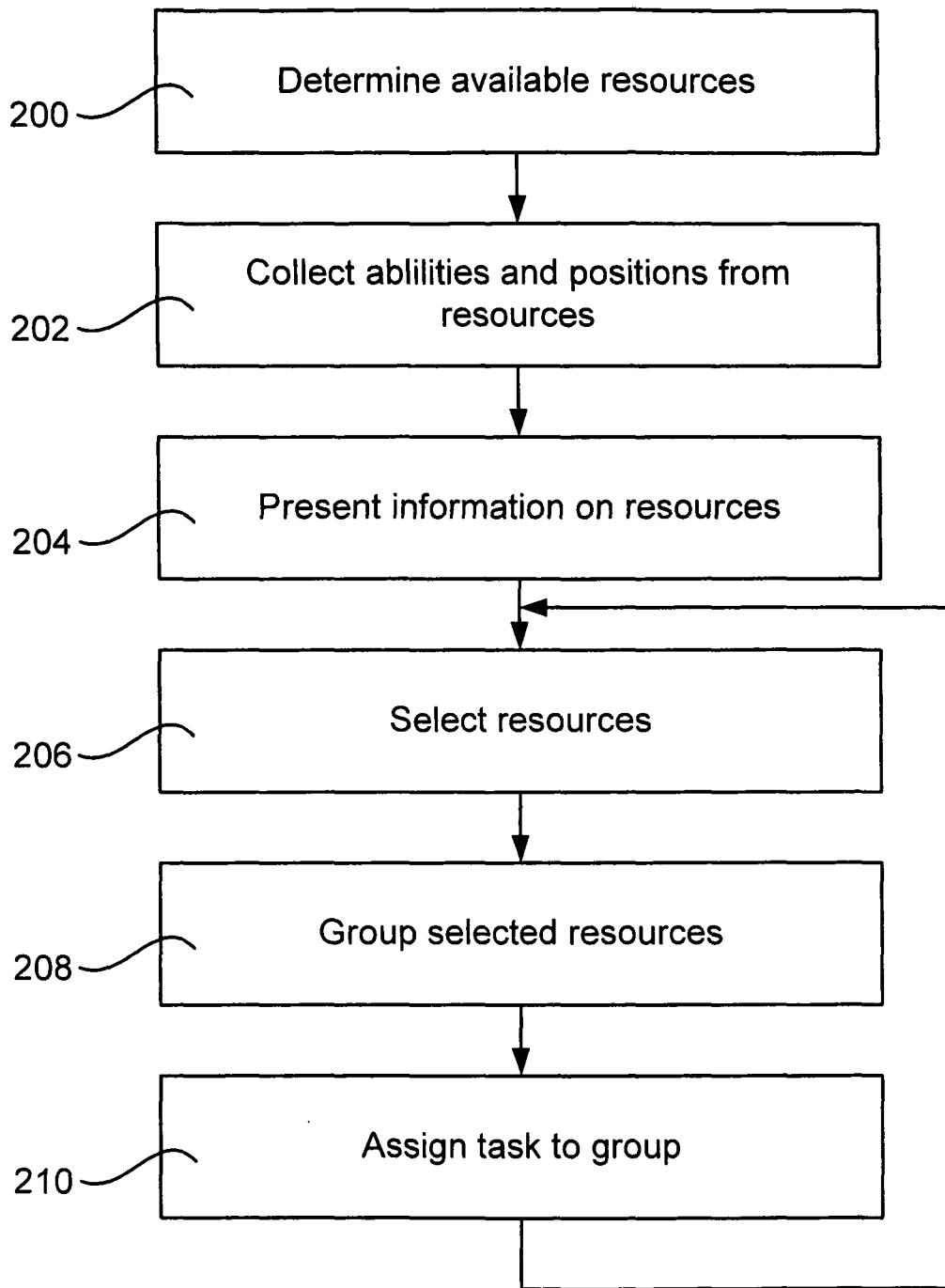
```
          ┌─────────────────────────────────────┐
          │                                     │
 200 ─────┤     Determine available resources   │
          │                                     │
          └─────────────────────────────────────┘
                          │
                          ▼
          ┌─────────────────────────────────────┐
          │   Collect abliities and positions from │
 202 ─────┤               resources             │
          │                                     │
          └─────────────────────────────────────┘
                          │
                          ▼
          ┌─────────────────────────────────────┐
          │                                     │
 204 ─────┤     Present information on resources │
          │                                     │
          └─────────────────────────────────────┘
                          │
                          ▼
          ┌─────────────────────────────────────┐
          │                                     │
 206 ─────┤            Select resources         │
          │                                     │
          └─────────────────────────────────────┘
                          │
                          ▼
          ┌─────────────────────────────────────┐
          │                                     │
 208 ─────┤        Group selected resources     │
          │                                     │
          └─────────────────────────────────────┘
                          │
                          ▼
          ┌─────────────────────────────────────┐
          │                                     │
 210 ─────┤          Assign task to group       │
          │                                     │
          └─────────────────────────────────────┘
```

Fig. 2

INTERNATIONAL SEARCH REPORT

A. CLASSIFICATION OF SUBJECT MATTER
INV. G06F9/50   G06Q10/00

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
G06Q   G06F   G01S   A62B   G08B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, INSPEC, COMPENDEX, IBM-TDB

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
	-/--	

[X] Further documents are listed in the continuation of Box C.   [X] See patent family annex.

* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
6 June 2007	14/06/2007

Name and mailing address of the ISA/	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL – 2280 HV Rijswijk Tel. (+31–70) 340–2040, Tx. 31 651 epo nl, Fax: (+31–70) 340–3016	Jonsson, Svante

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C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WAGNER T ET AL: "COORDINATORS coordination managers for first responders" AUTONOMOUS AGENTS AND MULTIAGENT SYSTEMS, 2004. AAMAS 2004. PROCEEDINGS OF THE THIRD INTERNATIONAL JOINT CONFERENCE ON NEW YORK, NY, USA 19-23 JULY 2004, PISCATAWAY, NJ, USA,IEEE, 19 July 2004 (2004-07-19), pages 1140-1147, XP010753999 ISBN: 1-58113-864-4	1-10, 15-27, 32-38
Y	page 1, left-hand column, line 1 - page 2, left-hand column, line 46 page 3, left-hand column, line 1 - page 5, right-hand column, line 31 page 7, left-hand column, line 35 - line 44 page 7, right-hand column, line 28 - line 29 figures 1,3-6 -----	11-14, 28-31
Y	US 2005/001720 A1 (MASON CHARLES [US] ET AL) 6 January 2005 (2005-01-06) paragraph [0024] - paragraph [0026] paragraph [0031] - paragraph [0034] paragraph [0040] - paragraph [0046] paragraph [0050] paragraph [0059] paragraph [0063] - paragraph [0066] paragraph [0070] - paragraph [0077] paragraph [0084] paragraph [0091] paragraph [0097] paragraph [0113] paragraph [0118] - paragraph [0121] paragraph [0133] - paragraph [0134] -----	1-38
Y	US 2004/070515 A1 (BURKLEY RAYMOND [US] ET AL) 15 April 2004 (2004-04-15) paragraph [0040] - paragraph [0047] paragraph [0053] paragraph [0057] - paragraph [0059] paragraph [0063] paragraph [0072] paragraph [0076] - paragraph [0090] paragraph [0097] paragraph [0104] paragraph [0109] paragraph [0115] paragraph [0128] - paragraph [0129] ----- -/--	1-38

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	WONG W B L ET AL: "A goal-oriented approach for designing decision support displays in dynamic environments" COMPUTER-HUMAN INTERACTION, 1996. PROCEEDINGS., SIXTH AUSTRALIAN CONFERENCE ON HAMILTON, NEW ZEALAND 24-27 NOV. 1996, LOS ALAMITOS, CA, USA,IEEE COMPUTER. SOC, US, 24 November 1996 (1996-11-24), pages 78-85, XP010201624 ISBN: 0-8186-7525-X page 81, right-hand column, line 6 - line 10 page 82, left-hand column, line 40 - right-hand column, line 21 page 83, left-hand column, line 1 - line 4 page 83, right-hand column, line 6 - line 7	1-38
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A	US 2005/219044 A1 (DOUGLASS JOHN [AU] ET AL) 6 October 2005 (2005-10-06) paragraph [0012] paragraph [0018] paragraph [0025] - paragraph [0039]	1-38

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