CLAIMS

1 – Method for broadcasting one or more signalling messages in a communication network comprising at least two clusters (10_1, 10_2), a cluster comprising at least one cluster head (24_1, 24_2) adapted to handle communications, and multiple nodes (11_{1k}, 11_{2k}) provided with transmitting/receiving means (12, 13), a cluster operating on a dedicated resource radio and all the clusters accessing to a common channel CS, characterized in that it comprises at least the following steps:

- at least one cluster head (24_1) of a first cluster (10_1) transmits a signalling message M to a set of nodes (11_{1k}) located in its cluster (10_1), using a dedicated radio resource CH_1,
- the nodes (11_{1k}) of the first cluster (10_1) having received and decoded the signalling message M relay this signalling message M to one or more relay nodes (11_{jk}) belonging to other clusters of the network that are in radio range using a cooperative transmission mechanism distributed on a radio resource of a dedicated common channel CS,
- the relay node or nodes (11_{jk}) of the other clusters (10_j) having received and decoded the signalling message M transmit it to their cluster head (24_j) using a distributed cooperative transmission method on a dedicated radio resource CH_j.

2 – Method according to Claim 1, characterized in that a cluster head selects one or more relay nodes for reaching a set of neighbouring clusters, and

- if two selected relay nodes do not share an external neighbourhood then they transmit on the same radio resource without interfering with each other,
- if two selected nodes have a portion of their external neighbourhoods in common, then they use the same radio resource cooperatively for improving the quality of their transmission.

3 – Method according to one of Claims 1 or 2, characterized in that it uses the dedicated common channel CS including signalling corresponding to a time-slot used by a set of nodes belonging to a cluster for cooperatively relaying the signalling from their cluster head to the neighbouring clusters.

4 – Method according to one of Claims 1 to 3, characterized in that a channel CH_j dedicated to the cluster (10_j) comprises a receiving RX_j slot (31_j), multiple slots $RSCH_j$, (32_j), used by a set of nodes belonging to a cluster for cooperatively relaying the inter-cluster signalling received from the neighbouring clusters to their cluster head, and a signalling slot $CHSCH_j$ dedicated to the cluster heads.

5 – System for broadcasting one or more signalling messages within a communication network comprising at least two clusters (10_1, 10_2), a cluster comprising at least one cluster head (24_1, 24_2) adapted to handle communications, and multiple nodes (11_{1k}, 11_{2k}) provided with transmitting/receiving means (12, 13), a cluster operating on a dedicated resource radio and all the clusters accessing to a common channel CS, characterized in that:

- at least one cluster head (24_1) of a first cluster (10_1) comprises a module adapted to transmit a signalling message M to a set of nodes (11_{1k}) located in its cluster (10_1), using a dedicated radio resource CH_1,
- the nodes (11_{1k}) of the first cluster (10_1) are provided with means of receiving and decoding the signalling message M and with means of relaying the signalling message M to one or more nodes (11_{jk}) of the other clusters (10_j) of the network that are in radio range using a cooperative transmission mechanism distributed on a radio resource of a dedicated common channel CS,
- the node or nodes (11_{jk}) having received and decoded the signalling message M transmit it to their cluster head (24_j) using a distributed cooperative transmission method on a dedicated radio resource CH_j.

6 – System according to Claim 5, characterized in that the common channel is the dedicated common channel CS including signalling corresponding to a time-slot used by a set of nodes belonging to a cluster for relaying the signalling from their cluster head to the neighbouring clusters.

7 – System according to one of Claims 5 or 6, characterized in that a channel CH_j dedicated to a cluster (10_j) comprises a receiving RX_j slot (31_j), multiple slots $RSCH_j$, (32_j), used by a set of nodes belonging to a certain cluster for relaying the inter-cluster signalling received from the neighbouring clusters to their cluster head, and a signalling slot $CHSCH_j$ dedicated to the cluster heads.