

Claims

1. A dynamic self-organising network recording system for a particular site comprising:

5 a plurality of mobile nodes;

an application installed on each of the plurality of mobile nodes, the application executable on each of the plurality of mobile nodes to:

determine if an anchor node is available for the particular site;

10 in response to determining an anchor node is not available for the particular site, assign one of the mobile nodes as the anchor node, perform a setup for the particular site in order to initiate collection of data to create a data signature of the particular site, and perform continuous collection of data until a new anchor node is assigned; and

15 in response to determining an anchor node is available for the particular site, respond according to request from the anchor node, wherein the step to perform continuous collection of data until the new anchor node is assigned comprises the application to:

20 obtain data from the non-anchor nodes, the data includes performance parameters values from one or more of system, device, link, network, application level, and connectivity of each non-anchor node with neighbouring nodes within the particular site,

determine a score for each of the mobile nodes;

determine whether the score for the anchor node is below a pre-determined threshold; and

25 in response to determining the score for the anchor node is below a pre-determined threshold, assign the new anchor node.

2. The dynamic self-organising network recording system according to claim 1 wherein the step to perform the setup for the particular site in order to initiate collection of data to create the data signature of the particular site comprises the application to:

determine an operating environment; and

5 check availability of cross layer Performance Reference Profiles (PRP) for the corresponding operating environment.

3. The dynamic self-organising network recording system according to claim 2 wherein the step to perform the setup for the particular site in order to initiate collection
10 of data to create the data signature of the particular site further comprises the application to:

in response to no cross layer PRP available, conduct a wireless site survey.

4. The dynamic self-organising network recording system according to claim
15 3 wherein the step to conduct a wireless site survey comprises the application to:

create a layout map of the particular site;

record other mobile nodes in the particular site as non-anchor node;

create a layout plan according to the particular site;

define zones of each of the non-anchor nodes with respect to the anchor node
20 location; and

scan and collect, from each of the non-anchor nodes, all performance parameters values from one or more of system, device, link, network, application level to create a data signature of the particular site.

25 5. The dynamic self-organising network recording system according to claim 4 wherein the step to create the data signature of the particular site comprises the application to:

determine statistical values for all performance parameters values obtained through wireless site survey in blocks of predetermined period for all zones.

6. The dynamic self-organising network recording system according to claim 1 wherein the step to determine a score for each of the mobile nodes comprises the application to:

assign a locality score, $Score_L$, to each mobile node based on the location of each of the mobile nodes within the boundary of the site with respect to a centroid location;

assign a connectivity score, $Score_C$, to each mobile node based on connectivity with neighbouring nodes;

assign a reliability score, $Score_R$, each mobile node based on the reliability determined which is a probability of any two nodes having an operative path connecting them;

determine the score for each mobile node with the following expression,

$Score_T = Score_L + Score_C + Score_R$; and

store $Score_T$ of each mobile node.

7. The dynamic self-organising network recording system according to claim 1 wherein the step to assign a new anchor node comprises the application to:

assign the mobile node with the highest $Score_T$ as the new anchor node;

notify the new anchor node to take over as the anchor node; and

transmit the data signature of the particular site and all data received to the new anchor node.

8. A dynamic self-organising network recording method for a particular site having a plurality of mobile nodes, the method comprising:

determining if an anchor node is available for the particular site;

in response to determining an anchor node is not available for the particular site, assigning one of the mobile nodes as the anchor node, performing a setup for the particular site in order to initiate collection of data to create a data signature of the particular site, and performing continuous collection of data until a new anchor node is assigned; and

in response to determining an anchor node is available for the particular site, responding according to request from the anchor node, wherein the step of performing continuous collection of data until the new anchor node is assigned comprises:

obtaining data from the non-anchor nodes, the data includes performance parameters values from one or more of system, device, link, network, application level, and connectivity of each non-anchor node with neighbouring nodes within the particular site;

determining a score for each of the mobile nodes;

determining whether the score for the anchor node is below a pre-determined threshold; and

in response to determining the score for the anchor node is below a pre-determined threshold, assigning the new anchor node.

9. The dynamic self-organising network recording method according to claim 8 wherein the step of performing the setup for the particular site in order to initiate collection of data to create the data signature of the particular site comprises:

determining an operating environment; and

checking availability of cross layer Performance Reference Profiles (PRP) for the corresponding operating environment.

10. The dynamic self-organising network recording method according to claim 9 wherein the step of performing the setup for the particular site in order to initiate collection of data to create the data signature of the particular site further comprises:

in response to no cross layer PRP available, conducting a wireless site survey.

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11. The dynamic self-organising network recording method according to claim 10 wherein the step of conducting a wireless site survey comprises:

creating a layout map of the particular site;

recording other mobile nodes in the particular site as non-anchor node;

10 creating a layout plan according to the particular site;

defining zones of each of the non-anchor nodes with respect to the anchor node location; and

scanning and collecting, from each of the non-anchor nodes, all performance parameters values from one or more of system, device, link, network, application level to
15 create a data signature of the particular site.

12. The dynamic self-organising network recording method according to claim 11 wherein the step of creating the data signature of the particular site comprises:

determining statistical values for all performance parameters values obtained
20 through wireless site survey in blocks of predetermined period for all zones.

13. The dynamic self-organising network recording method according to claim 8 wherein the step of determining a score for each of the nodes comprises:

assigning a locality score, $Score_L$, to each mobile node based on the location of
25 each of the mobile nodes within the boundary of the site with respect to a centroid location;

assigning a connectivity score, $Score_C$, to each mobile node based on connectivity with neighbouring nodes;

assigning a reliability score, $Score_R$, each mobile node based on the reliability determined which is a probability of any two mobile nodes having an operative path
5 connecting them;

determining the score for each mobile node with the following expression,

$Score_T = Score_L + Score_C + Score_R$; and

storing $Score_T$ of each mobile node.

10 14. The dynamic self-organising network recording method according to claim 8 wherein the step of assigning a new anchor node comprises:

assigning the mobile node with the highest $Score_T$ as the new anchor node;

notifying the new anchor node to take over as the anchor node; and

transmitting the data signature of the particular site and all data received to the

15 new anchor node.