[0114] However, as mentioned above, this reporting leads to a considerable overhead. Hence, embodiments of the present invention aim to reduce this overhead.

[0115] In the following, a general embodiment of the present invention is described by referring to FIG. **1**.

[0116] In particular, FIG. **1** shows several elements involved in the procedure according to embodiments of the present invention, in this case a UE **1** and an eNB **2** as corresponding examples.

[0117] The UE **1** is an example for a mobile terminal. The corresponding apparatus may also be only a part of the UE or the mobile terminal.

[0118] The UE **1** comprises a processor **11** and a memory **12** for storing instructions to be executed by the processor. The processor **11** is configured to receive transmission on a transmission channel, wherein the transmission channel comprises a plurality of channel units (as examples for subcarriers, CCs, PRB etc.) via which transmission is carried out, to obtain channel prediction values for at least one of the plurality of channel units, to determine whether the channel prediction value of the at least one channel unit is correct or not, and, in case the channel prediction value is not correct, to report an error of the at least one channel unit.

[0119] The UE **1** may also comprise a transmitter/receiver **13** which is configured to provide a connection with, e.g., the eNB **2** and other network elements. For example, the UE **1** may send the report to the eNB **2**.

[0120] The eNB **2** is an example for a network control element. The corresponding apparatus may also be only a part of the S-CSCF or the corresponding network control element.

[0121] The eNB **2** comprises a processor **21** and a memory **22** for storing instructions to be executed by the processor. The processor **21** is configured to perform transmission on a transmission channel, wherein the transmission channel is divided into a plurality of channel units (e.g., subcarriers, CCs, PRBs etc.), and to receive a report as to whether a channel prediction value for a at least one of the channel units is not correct.

[0122] The eNB **2** may also comprise a transmitter/receiver **23** which is configured to provide a connection with, e.g., the UE **1** and other network elements. For example, the eNB **2** may receive the report from the UE **1**.

[0123] Thus, according to embodiments, a report is only sent when there is a prediction error on a channel unit. That is, a transmission of the report is only effected when it is needed. In this way, the reporting overhead can largely be reduced.

[0124] According to a more detailed embodiment of the present invention, the report may be sent on a dedicated channel, which may be on a pre-arranged uplink resource, e.g., on a PUCCH.

[0125] In this way, according to embodiments of the present invention, a low latency low rate CSI feedback channel is provided.

[0126] That is, in addition to the main feedback channel containing the information of channel prediction as well as per channel component reliability, a further low rate low latency feedback channel limited to reporting of failed PRBs is provided. Failed PRBs are those for which the prediction error is above a certain prediction accuracy threshold like e.g. above −10 dB.

[0127] The concept is similar to 'fly by wire' as used for airplanes, which are not able to fly without constant control actions and would otherwise fall to earth immediately. For JT CoMP the situation is similar, i.e. the system constantly tends to get out of the intended operation point, but by using the small amount of fast feedback information the central unit will be able to take the proper counter actions.

[0128] The detection of the failed PRBs is done based on a comparison at UE side (here FDD downlink CoMP is being assumed) between the predicted and reported and the actually measured radio channels.

[0129] In the following, some feedback channel design options are described. Generally there should be pre-arranged uplink resources for the physical uplink control channels (PUCCH) of all cooperating UEs so that the latency of the feedback is minimized.

[0130] Note, here the assumption is a channel prediction (plus predictive scheduling as illustrated in FIG. **3** for a prediction horizon of e.g. 100 ms and for nomadic users. In that case an e.g. 5 ms reporting period would be already sufficiently fast and really valuable. FIG. **3** illustrates a typical predictive scheduler where a set of N subframes (N e.g. equal to 10) is prescheduled in the first e.g. 3 symbols of the first subframe. Each rectangle illustrates one PRB. Different grey shades indicate different UEs with different C-RNTIs.

[0131] In the following, some reporting options are described in detail.

Reporting Option a)

[0132] In case of very few failed CCs, a bitmap with '1'-th for errored and a '0' for correctly predicted CCs is a most appropriate solution, since lossless compression (ZIP like coding) allows to reduce the raw data rate by more than 90%. Note it is sufficient to report the first occurrence of a threshold event and to report in the following reports a zero for the already failed PRBs.

[0133] Typical data rates per UE would be—assuming a realistic compression ratio of 80 to 90% and <=10% of errored CCs for 100 PRBs times 10 relevant CCs—in the range of ~100 bit/UE/report. For a fast reporting of every 5 ms the feedback rate would be 100/5 ms=20 kbit/s. Doing further subband reporting only for 25% of all PRBs then even 5 kbit/s would be possible.

Reporting Option b)

[0134] Alternatively, one might define semistatically an UE individual list of critical CCs and PRBs, which might fail soon, e.g. due to an already reported low reliability. By excluding highly reliable CCs from reporting, the feedback overhead can be reduced. Instead of a bitmap CCs and PRBs from the list might be directly addressed by e.g. 3 . . . 4 bit for the CC index and 1 . . . (4) . . . 7 bit for the PRB index. Assuming again 10% failed CCs the feedback rate could be less than 8 bit*0.1*100 PRB/5 ms=16 . . . 20 kbit/s per UE or in case of 30 active users a sum rate of 600 kbit/s . . . 1 Mbit/s for the PUCCH. In combination with a bitmap approach and a limitation to reporting of the worst case CC only few kbit/s per UE would be possible, partly due to higher compression ratios for the lossless compression.

Reporting Option c)

[0135] The UEs report only which of the CCs has been failed without any information about the affected PRB (or the other way round only PRB index without information