TSG-RAN meeting #17 RP-020594
September 3-8, Biarritz, France

Status Report for WI to TSG

Work Item Name: MIMO processing for HSDPA

SOURCE: Rapporteur TSG: RAN WG: 1

E-mail address rapporteur: hchuang@lucent.com

Ref. to WI sheet: RAN_Work_Items.doc

Progress Report since the last TSG (for all involved WGs):

RAN WG1:
Since the last RAN plenary meeting, the 3GPP-3GPP2 Spatial Channel Model AdHoc Group (SCM AHG) has held four conference calls and held a meeting in Seattle, USA on August 20-22, 2002 (concurrent with 3GPP RAN1 #28). The following items have been addressed.

Link channel model. The link channel model will be used in link level simulations for the purpose of algorithm calibration, which is the comparison of performance results from different implementations of a given algorithm. These simulations will not be used to compare performance of different algorithms. The link channel model consists of four channel environments: ITU Pedestrian A, ITU Pedestrian B, ITU Vehicular A, and single path (Rayleigh fading). These environments have been fully specified in terms of power delay profiles, power azimuth spectrum, direction of UE travel, UE speed, antenna topologies, and angles of departure/arrival of signal paths.

System channel model. The system channel model will be used in system level simulations for comparing various MIMO algorithm proposals. This model consists of three channel environments: urban macrocell, suburban macrocell, and urban microcell. The two macrocell environments have been fully specified in terms of the delay spread and angle spread statistics. The microcell environment has been partially specified and should be finalized by the next conference call held in two weeks. Given the environment statistics, a series of twelve steps were agreed upon for generating parameters for each user in the system simulation. The system channel models have been mostly specified by the August 2002 deadline recommended by the 3GPP-3GPP2 harmonization group.

Polarization. Modeling polarization at the UE and Node B have been discussed but not finalized.

System level simulation methodology. These issues include system simulation calibration, computational complexity, and performance prediction (mapping frame error rate to a consistent scalar metric). The complete methodology should be specified by March 2003, according to a goal set by the 3GPP-3GPP2 harmonization group.

A summary of the SCM AHG work can be found in the SCM text [1], and a summary of the Seattle meeting can be found in [2]. The FTP site of the SCM AHG is www.3gpp.org/ftp/tsg_ran/WG1_RL1/3GPP_3GPP2_SCM. Because of the SCM AHG work, the MIMO TR 25.876 [3] has not been updated.

RAN WG2:
The WI has not been treated yet.
RAN WG3:
The WI has not been treated yet.
RAN WG4:
The WI has not been treated yet.

List of completed elements:

- Requirements
- Link level channel model
- System level channel model

List of open issues:

- System level simulation methodology (to be completed by February 2003, as set forth by the 3GPP-3GPP2 harmoization group)

- Evaluation of MIMO proposals
- Impacts to UE and UTRAN implementation.
- Impacts to physical layer operation.
- Conclusion

Estimates of the level of completion (when possible):

35%

WI completion date review resulting from the discussion at the working group:

06/2003 (TSG-RAN#20)

References to WG's internal documentation and/or TRs:

[1] SCM-035, “Spatial Channel Model Text Description”.
[2] SCM-050, “Spatial Channel Model Ad Hoc Group Meeting 2 Summary”.
[3] RP-020240, "Multiple-Input Multiple-Output Antenna Processing for HSDPA", TR 25.876 v1.1.0