Project	**IEEE 802.20 Working Group on Mobile Broadband Wireless Access** <**http://grouper.ieee.org/groups/802/20/**>
Title	**Status of Evaluation Criteria**
Date Submitted	**2003-09-15**
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Re:	MBWA Call for Contributions – Session # 4, September 15-18, 2003
Abstract	This contribution summarizes the status of IEEE 802.20 Evaluation Criteria activities.
Purpose	Review
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Status of 802.20 Evaluation Criteria

IEEE 802.20 Evaluation Criteria CG

IEEE 802.20 Interim Meeting

September 15-19, 2003

Evaluation Criteria Status

- Two conference calls since the July plenary
- Consensus reached on several issues:
  - Cell layout, Full-duplex simulations, TCP model, backhaul network delay and loss models
- Version 05 of the Evaluation criteria document available (C802.20-03/78).
- Open issues:
  - Sectorization, mobility modeling, higher layers protocol models, control signaling models, definition of spectral efficiency, fairness criteria and performance metrics etc.
- Three conference calls scheduled between the September interim and November plenary

Cell Layout

- Decision to use 19-cells Wrap-around technique for system simulations.
- Statistics collected from all the cells.

Fully-duplex Simulations

- Decision to include both UL and the DL in a fully duplex fashion in the same simulation run.
- Allow to accurately model the traffic, physical and MAC layer dependencies between the uplink and the downlink.
- This issue can be revisited later on as more details on the evaluation methodology, channel models, traffic models and proposals become available.

TCP Model

- Decision to use a simplified TCP model:
  - connection establishment phase
  - slow start phase
  - connection release phase
- Other details of TCP such as congestion avoidance are not modeled.
- The details of the model are specified in in the Evaluation criteria document.

Network delay/loss model

- Decided not to model any packet loss in the Internet (lossless packet transmission)
- Decision to model the one-way Internet packet delay using a shifted Gamma distribution:
  - The delay is independent from packet to packet.

IP Route Type	Percentage of users	Shift parameter	Mean one-way IP packet delay
Domestic	80%	7.5ms	10ms
International	20%	107.5ms	110ms

Sectorization

- The question is what should be the number of sectors per cell modeled?
- The issue is also related to modeling of the multiple antenna techniques
- Should there be a single mandatory baseline configuration e.g. omni-cell, 3-sector cell etc?

Spectral efficiency

- How to define the spectral efficiency in the context of multi-sector and/or multiple-antenna cells?
  - B/s/Hz/cell ?
  - b/s/Hz/sector ?
  - b/s/Hz/antenna ?
- Need to arrive on a acceptable definition of spectral efficiency so that different proposals can be compared on a fair basis.

Mobility model

- The CG decided not to model the actually moving mobiles in the simulations
- Mobility at the physical layer is taken care of by modeling fast fading corresponding to the mobile speed.
- However, some mobility model is still needed e.g. in order to analyze the handoff schemes etc.

Higher Layer Protocols

- Need input from requirements and the traffic modeling CG on the types of applications supported.
- Models for higher layer protocols such as HTTP, RTSP and RTP etc. as applicable can then be specified.

Control signaling modeling

- Examples of control signaling are scheduling grants transmission, channel quality feedback, and ARQ ACK/NACK Feedback etc.
- MAC states and signaling to enable state transitions modeled explicitly in the system simulations.
- Inputs needed

Performance Metrics

- List of performance metrics is incomplete.
- Input needed from the traffic modeling CG on the list of applications supported before the application specific performance metrics can be defined.

Fairness criteria

- A fairness criteria needed in order to guarantee minimal level of throughput to all users in the system.
- A fairness criteria can be defined as a constraint on the user throughput CDF
  - For example, normalized throughput CDF should lie to the right of the Fairness criteria curve.
- Input needed