Enhanced UTMS Radio Access Network (EURAN)

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ABSTRACT

3rd Generation mobile communication transport networks are expected to be mainly IP based. The Enhanced UMTS network architecture will have to provide support for a wide variety of applications and services, through the implementation of extended network functionality. The effectiveness of these new network functions can initially be determined through the use of simulation [1]. In this deliverable the implementation of a UMTS base simulator is presented, along with a description of the network functionality required to support High Speed Downlink Packet Access (HSDPA). Methods of modeling this HSDPA functionality, to extend the base simulator, are also presented. Enhanced packet-data access is a trend in third generation mobile communication system. WCDMA Release 5 introduces HSDPA (High Speed Packet Data Access) with a brand new downlink transport channel HS-DSCH into 3GPP specification to provide greater capacity. HS-DSCH supports some new feature such as fast link adaptation, fast scheduling and fast HARQ (hybrid ARQ) so as to increase system performance. It efficiently improves power utilization, shortens retransmission time and increases system throughput. The focus for this thesis is implementation and simulation of HSDPA functionality with ns-2. The project proposes a set of enhancements to UMTS that encompass radio interface, access network. The effect of these enhancements will be evaluated by means of simulation techniques. The simulator examines and to evaluate the throughput of UMTS system offers and that can be realized by optimizing tunable parameters and the addition of algorithms. For the basic UMTS network level simulator the focus is on acknowledged mode functionality in the RLC. For the enhanced UMTS network level simulator the focus is on MAC-HS functionality including HARQ, Fast Link Adaptation and Fast Scheduling.

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