TSG RAN WG2 #51 / WG3 #51
Denver, USA, February 13-17, 2006

R2-060612/R3-060232

HSPA Evolution

Targets

ERICSSON
TAKING YOU FORWARD

Introduction

- HSPA has high potential to meet the LTE targets on 5 MHz (ref RP-050909)

⇒ Need to set targets for HSPA Evolution

Targets – *High level view*

- Evolved HSPA shall be on par with respect to performance with LTE when operating in a 5 MHz spectrum allocation
- Evolved HSPA architecture should have minimum impact on Node Bs, to allow for simple upgrades
- Evolved HSPA protocol architecture shall have minimum impact on UEs, to allow for easy introduction
- Evolved HSPA and WCDMA/HSPA shall be possible to share the same carrier in the same Node B to support UEs of earlier releases
- Evolved HSPA shall be packet optimized
  - *No need to support CS services*
  - *No need to support DCH*
- Evolved HSPA shall provide handover to/from GERAN, WCDMA/HSPA, and LTE
- Evolved HSPA should not require tight network synhronization
  - *... but some of the stated targets may assume tight network synchronization*

Target environments

- The HSPA evolution should be applicable to all environments currently applicable to WCDMA/HSPA
- … *but focus should be on low mobility and urban/sub-urban environments*
- Graceful degradation at high mobility and large cells acceptable

Targets – *Data rates and throughput*

- Downlink:
  - Peak: *At least 40 Mbps*
  - Average user throughput: *At least 10 Mbps*
  - Cell-edge user througput*: At least 3 Mbps*
- Uplink:
  - Peak data rates: *At least 10 Mbps*
  - Average user throughput: *At least 4 Mbps*
  - Cell edge user throughput: *At least 1.5 Mbps*
- *Assumptions:*
  - *Dual-RX-antenna terminals*
  - *Intermediate load*
  - *Small cells*

Targets – *Latency*

- User-plane RTT: *Less than 20 ms*
  - *UE-RNC-UE or RNC-UE-RNC*
- Power-saving state to active: *Less than 50 ms*
  - *URA_PCH, Cell_PCH and Cell_FACH excluding DRX cycles*
- RRC Idle to active: *Less than 100 ms*
  - *Excluding DRX cycles and NAS signalling*

Targets – *Spectrum efficiency*

- Downlink spectrum efficiency for data traffic
  - *At least **1.5 bps/Hz** (assuming dual-antenna terminals)*
  - *At least **2.5 bps/Hz** (assuming 4-antenna terminals)*
- Uplink spectrum efficiency for data traffic
  - *At least **1 bps/Hz** (assuming 2 RX antennas at Node B)*
- VoIP capacity: ***Up to 200 users / carrier***
- Broadcast/multicast: *At least 3 Mbps/carrier (0.6 bps/Hz)*
  - *Asumes dual-antenna terminals and multi-cell broadcast/multicast*

Targets – Mobility

- Support of no loss of data, seamless and fast handover when doing intra evolve HSPA mobility
  - *Interuption times in the order of 10-20 ms*
  - *Procedure times in the order of 50-100 ms*
- Support of no loss of data, seamless and fast mobility from GPRS, WCDMA/HSPA and LTE
  - *Interuption times*
    - from GPRS/WCDMA/HSPA/LTE: Less than 20 ms
    - to GPRS/WCDMA/HSPA/LTE: detemined by target technology
  - *Procedure times:*
    - from GPRS in the order of 200-500 ms
    - from WCDMA/HSPA 100-150 ms
    - from LTE 50-100 ms
    - to GPRS/WCDMA/HSPA/LTE: detemined by target technology

Spectrum aspects

- Operation in a wide range of spectrum
- Support for flexible duplex distance
  - *Allowing for pairing of different UL and DL frequencies in the same band and in different bands*
  - *Support for duplex distances down to at least 30 MHz (depending on exact spectrum)*

ERICSSON

TAKING YOU FORWARD