

Optimising and Evolving 3G Networks

16 – 19 June 2008, Andels Hotel, Prague

- ?? **Optimising the capacity, coverage and quality of your 3G/HSPA network to meet the demands of increased traffic and mobile internet services**
- ?? **Exploring the business models and technical challenges of 3G RAN sharing**
- ?? **Understanding how and why to re-farm the 900MHz spectrum for UMTS**
- ?? **Evolving your 3G network for mobile broadband service delivery – examining the latest developments in HSPA, LTE and mobile WiMAX**

Pre-Conference Workshop – Monday 16th June

UMTS900

Conference Day One – Tuesday 17th June

OPTIMISING THE 3G NETWORK

A1. Optimising Your 3G Network To Improve Coverage And Capacity As Traffic Volumes Increase

- ?? Identifying the services which are driving the need for increased capacity in the 3G RAN
 - to what extent are recent increases in mobile internet traffic impacting capacity in 3G/HSPA networks?
- ?? Monitoring and analysing voice and data traffic on the 3G RAN to determine what proportion of your voice services to maintain on 3G:
 - Enabling dynamic transfer of voice services from 3G to 2G to increase 3G capacity for high bandwidth data services
- ?? Updating your network configuration to track increase of traffic, changes in customer behaviour and introduction of new services in order to reshape coverage and balancing of traffic among active cells
- ?? Simultaneously optimising coverage, capacity and quality; is it possible to gain capacity without losses elsewhere?
- ?? Using performance measurement data to re-dimension RAN capacity for new service launches

A2. Achieving Effective Radio Planning For 3G/HSPA Networks: Meeting the Challenges Of Planning For New Services

- ?? Optimising cell site locations in the planning phase: Co-planning multiple technologies and setting interworking parameters
- ?? Analysing and improving the RF environment, both before and after 3G deployment
- ?? Establishing parameter settings for UMTS and HSDPA
- ?? Developing techniques to enable the operational deployment of Automatic Cell Planning solutions in 3G networks and analysing the impact on performance
- ?? Deploying neighbour list planning to enhance network quality and coverage

A3. Examining The Costs And Benefits Of MIMO Technology For 3G Networks

- ?? Examining the advantages and disadvantages of using MIMO-based smart antennas in terms of:
 - Data rates achieved
 - Spectral efficiency
 - Coverage
 - Capacity
 - Interference
- ?? Evaluating throughput rates actually being achieved with MIMO
- ?? Examining the effect of smart antennas (based on MIMO and beam forming technologies) on network behaviour
- ?? Determining to what extent drive tests capable of collecting the necessary data
- ?? What new techniques need to be developed to measure performance in the 3G RAN?
- ?? Capturing and analysing the data that is transported between the antenna and the Radio Network Controller (RNC) to ensure you can make meaningful measurements

A4. Implementing a 3G Network when you Already Have A 2G Network: Considering The Customer Perspective

- ?? Determining whether 3G will ever be as good as 2G in terms of coverage:
 - what can be done to cost-effectively improve coverage for 3G?
- ?? Examining the impact on customers in terms of network and service quality of implementing both a 2G and a 3G network
- ?? Do customers have a “right” to coverage and high speed data services? Or is it inevitable that customers in cities get a better and faster network than those in small villages?
- ?? Evaluating the cost of building more coverage for 3G networks: Assessing whether this cost will inevitably be passed to customers, and if so, how this will impact customer satisfaction

Bjørn Amundsen
Vice President/Director & Head of Coverage
Telenor Norway

HIGH-BANDWIDTH SERVICES & CONTENT

A5. Delivering Mobile VoIP Over 3G Networks

- ?? Determining the effectiveness of 3G to deliver a high quality end-to-end mobile VoIP experience:
 - how will potential upgrades to HSPA and LTE impact VoIP service delivery?
- ?? Assessing the impact of mobile VoIP on bandwidth availability and network performance for the 3G network
- ?? Considering the impact of non-operator VoIP on the mobile landscape and the implications for 3G revenues

A6. Deploying HSUPA To Optimise Network Capacity For Bandwidth-Heavy Services

- ?? Examining the capability of HSUPA to cope with sudden and unexpected surges in uplink traffic
- ?? Examining the growing demand for using the 3G network to upload user-generated content
- ?? Developing strategies for minimising the impact of heavy traffic on the uplink
- ?? Predicting how the network will respond to unexpected traffic and mixed service scenarios

A7. Comparing DVB-H With 3G For Mobile TV Delivery

- ?? Evaluating the cost for mobile operators of deploying DVB-H infrastructure
- ?? Mitigating interference between DVB-H and mobile radio technologies
- ?? Comparing DVB-H and mobile TV over 3G in terms of:
 - Cost-efficiency
 - Performance
 - Capacity
 - Future-proofing of DVB-H
- ?? Determining the impact of deploying DMB for mobile TV on traffic congestion on the 3G RAN
- ?? Examining the effect of UHF frequency unavailability on DVB-H launch timescales

RE-FARMING THE 900MHz SPECTRUM FOR UMTS

A8. Identifying The Drivers For And Meeting The Technical Challenges Of UMTS900

- ?? Quantifying the impact on CAPEX and OPEX of re-farming the 900MHz spectrum for UMTS
- ?? Determining the impact of using the 900MHz spectrum for 3G in terms of:
 - coverage, especially indoor and rural
 - signal propagation
 - robustness to low signal strength
- ?? Minimising the impact on GSM performance whilst deploying UMTS on the 900MHz spectrum
 - spectrum management of the 900MHz band
 - minimising base station site impact
 - network management of both the established GSM900 and the new UMTS900 networks
- ?? Minimising GSM900/UMTS900 co-location interference:
 - guard band allocation
 - spectrum allocation
 - co-location filtering

A9. Analysing The Regulatory Issues Associated With Re-Farming 900MHz Spectrum For UMTS

- ?? Outlining the regulatory environment regarding 900MHz spectrum re-farming in different countries throughout Europe and beyond
- ?? Examining the latest EU regulations: How will the regulators in the individual EU member states respond to these regulations?
- ?? Assessing the timescales for the re-farming of the 900MHz spectrum from a regulatory perspective

- ?? Examining the future possibility of bidding for more frequencies and greater bandwidths

A10. Understanding The Drivers For Deploying UMTS900 In Rural Areas

- ?? Determining to what extent UMTS900 will solve coverage problems in sparsely populated rural areas
- ?? Quantifying the cost of rolling out UMTS900 in rural areas
- ?? Identifying and meeting the technical challenges

A10. PANEL SESSION – UMTS900

This panel session will cover in detail all the issues related to refarming the 900 MHz spectrum for UMTS. Panellists will consider the drivers for doing so, and outline strategies for solving the technical issues that arise. There will also be representatives from the regulatory world on the panel to answer your questions about how the regulatory environment in different countries will affect spectrum re-farming.

Conference Day Two – Wednesday 18th June

3G RAN SHARING

B1. Assessing The Technical And Business Models And Drivers For 3G RAN Sharing

- ?? Outlining the different options for RAN sharing and their implications for operators' planning activity
 - Shared Node Bs and RNCs
 - Shared masts
 - Shared antennas
- ?? Investigating the advantages and disadvantages of sharing the same frequency or carrier
- ?? Selecting the most appropriate radio resource management strategies based upon your RAN sharing agreement

B2. Achieving Optimal Results In The Design And Management Of Your Shared 3G RAN

- ?? Outlining the design and planning considerations for achieving a shared 3G RAN
 - vendor support of RAN sharing
 - choice of technical solution
 - testing
 - radio planning
 - O&M
- ?? Managing the day-to-day running of your shared 3G RAN:
 - Identifying the operational issues that arise from sharing a network with a competitive operator and developing strategies to manage these challenges
- ?? Managing network performance and E2E Quality of Service across a shared network
- ?? Exploring the impact of network sharing on network performance and end to end service quality management

B3. PANEL SESSION: 3G RAN Sharing

Network sharing is a great idea, with obvious financial benefits for operators. But how does it actually work in practice? What are the problems in sharing a RAN with competitors, and how can they be solved? Panellists with direct experience of 3G RAN sharing will be available to answer your questions and to discuss the most pressing issues relating to network sharing.

PERFORMANCE MEASUREMENT

B4. Optimising 2G/3G Interoperability To Provide End-To-End Service Quality

- ?? Studying customer behaviour and traffic flow in order to predict where in the network users are being moved from 3G - 2G
- ?? Enhancing the 2G network to receive customers from the 3G network
- ?? Optimising packet service in the 2G cell
- ?? Ensuring seamless 2G-3G operation through correct definition and parameterisation of network edge cells
- ?? Defining new metrics and KPIs to measure and optimise different mobility procedures between 2G and 3G:
 - Handover 3G/2G
 - Reselection 2G<>3G

Jakov Stojanovic
Radio Network Optimisation Manager
Telenor Serbia

B5. Optimising Handover Between 2G And 3G To Improve The Customer Experience

- ?? Defining the key metrics for measuring the success of 3G<>2G handover
 - Handover IRAT time
 - Compress Mode time
 - Call Setup Success Rate
 - Call Completion Rate
 - Dropped Call Rate
- ?? Analysing the number and type of attempted handovers and optimising the network accordingly:
 - Avoiding loss of speed and loss of service during 3G<>2G handover
- ?? Performing success and failure rate analysis of both soft and hard handover
- ?? Determining how to minimise delay on 2G<>3G handover to optimise the customer experience

B6. Optimising Performance Measurement Tools And Strategies To Enhance End-To-End Throughput

- ?? Developing new ways of measuring performance for 3G networks to improve QoS and QoE for video, VoIP and data services
- ?? Defining KPIs and KQIs that are relevant for all services in your 3G network
- ?? Determining how to use your measurements for:
 - fault detection
 - network optimisation
 - capacity management

B7. Improving 3G Network Coverage And Quality Of Mobile Services Indoors By Deploying Femtocell Solutions

- ?? Analysing the transmission speeds and quality of service being achieved by femtocell solutions for high speed data applications
- ?? Determining the extent to which femtocell deployment will encourage substitution of voice minutes from the fixed line phone in the home
- ?? Assessing the impact of femtocells on the performance of the wider network in terms of:
 - Interference
 - Handover from femtocell access point to macrocell network
 - Interference between closely located femtocells
- ?? Meeting the challenges of bandwidth management and QoS in femtocells
- ?? Developing tools and techniques to collect real-time performance data direct from femtocells in the field to improve service performance

UPGRADING THE 3G BACKHAUL

B8. Upgrading Your Backhaul Network To Meet The Bandwidth Requirements Of 3G Service Delivery

- ?? Outlining the role of the mobile backhaul in 3G service delivery:
 - timescales for the transition to all-IP
 - guaranteeing QoS for voice in an all-IP core
- ?? Ensuring your backhaul network is designed and equipped to meet peak traffic demand, not just average usage levels
- ?? Implementing core networks that can simultaneously aggregate 2G and 3G backhaul traffic
- ?? Determining the impact on end user data rates and number of active subscribers served of the backhaul technology employed
- ?? Comparing the different backhaul solutions in terms of network and service quality and CAPEX/OPEX:
 - microwave
 - Ethernet over fibre
 - Ethernet over copper

B9. Developing Cost And Performance Optimised Backhaul Networks For New And Rapidly Growing Mobile Broadband Traffic

- ?? Forecasting how the growth of mobile broadband technologies will impact backhaul capacity demands, considering:
 - HSPA
 - LTE
 - WiMAX
- ?? Evaluating the importance of high capacity backhaul in enabling optimal mobile broadband performance
- ?? Examining and comparing the different potential backhaul strategies:
 - Metro Ethernet
 - Optical
 - Microwave

Thursday 19th June

Special Briefing Day – Long Term Evolution For Mobile Broadband

C1. Identifying The Roadmap For Mobile Broadband Technologies And Services

- ?? Considering the pros and cons of the different next generation mobile technologies for delivering mobile broadband services:
 - 3G
 - HSPA
 - HSPA+
 - LTE
 - UMB
 - Mobile WiMAX
- ?? Determining where in the network these technologies are most appropriate
- ?? Identifying the new services that are enabled by high speed mobile broadband networks: ensuring that all your services offer a reliable quality of experience for the customer

C2.

- ?? Understanding the impact on your 3G network of the upgrade to HSPA in terms of coverage, capacity and performance
- ?? Determining what HSPA means for mobile broadband services in terms of:
 - Downlink/uplink speeds
 - services enabled
- ?? Ensuring a good voice service is maintained when HSPA is active for data users

C6. Case Study: Deploying And Optimising An HSPA Network

- ?? Determining how planning and simulation tools and strategies for HSPA networks differ from those for 3G
- ?? Choosing and comparing simulation tools for high speed data networks
- ?? Optimising your HSPA network to respond dynamically to changing capacity requirements

C7. Enabling The Core Network To Support Multiple Next Generation Mobile Broadband Technologies

- ?? Ensuring support for multiple access technologies:
 - 3G/HSPA
 - LTE
 - WiMAX
- ?? Examining the implications of support for diverse access systems for seamless coverage
- ?? Mitigating the limitations of current backhaul technologies in terms of handling increased levels of data
- ?? Developing strategies for backhaul network evolution towards all-IP