

Free Copy Of New Book  
"GSM, GPRS & EDGE Performance"  
For The First 25 Delegates Registered!

# IIR's 5th Annual GSM/GPRS Performance Measurement

*Implement Efficient Performance Measurement To Optimise GSM & GPRS Networks And Guarantee QoS For All-IP Mobile Networks*

24th - 26th March 2003, Mayfair Conference Centre, London

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## Conference Highlights Include

- Actual performance measurement results from GPRS networks
- A whole day of presentations on performance measurement and guaranteeing QoS for ALL-IP MOBILE NETWORKS
- Presentations from 11 mobile operators sharing their experience of measuring network performance

## PLUS! Intensive Post-Conference Workshop

*Thursday 27th March 2003*

*Morning Session*

**Meeting the Challenges of Deploying, Optimising and Managing Next Generation Wireless Networks and Guaranteeing Service Quality**

*Led by Agilent Technologies*

*Afternoon Session*

**Troubleshooting and Optimising the Performance of GSM, GPRS and UMTS Networks Using Customer Generated Traffic**

*Led by NetTest*

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### Morning Session - 9.30 a.m. - 12.30 p.m

#### Meeting the Challenges of Deploying, Optimising and Managing Next Generation Wireless Networks and Guaranteeing Service Quality

##### Led by Agilent Technologies

Introducing new network technologies and data services while continuing to improve the quality and efficiency of the existing network and services is a challenge for every business function and department within a telco. The must-do list gets tougher and more extensive all the time: get services to market in record time; accelerate time-to-revenue; manage quality of service and customer satisfaction; manage services - end-to-end; aggressively work to cut operational expenses; squeeze every ounce of value from existing assets.

This half-day workshop will examine the lifecycle of a service launch and the network and service assurance processes required to ensure operational visibility and service excellence. Agilent will provide scenarios that describe the various data sources, collection, aggregation and reporting, to include an example wireless data service and SLA with comprehensive Key Performance Indicators (KPIs). They will explain how customer centric GPRS service assurance helps sharpen the focus on customer, domain, and service issues from the handset to the content delivered. They will also provide a business case that validates this concept in a real-life environment.

##### About Your Workshop Leader

**Agilent Technologies Inc.**, is a global technology leader in communications, electronics and life sciences. In wireless communications, Agilent provides solutions and services covering the entire lifecycle - from component design right through to managing revenue generating services. With the broadest portfolio of communications test and OSS solutions in the industry, Agilent Technologies enables wireless service providers to address the intricate issues involved in deploying, optimising and managing current and next-generation wireless networks and services, while simultaneously reducing operating costs and discovering new revenue generating opportunities. For further information, please visit [www.agilent.com](http://www.agilent.com)

### Afternoon Session: 1.30 p.m. - 4.30 p.m.

#### Troubleshooting and Optimising the Performance of GSM, GPRS and UMTS Networks Using Customer Generated Traffic

##### Led by NetTest

This session will be a practical workshop to which attendees are encouraged to bring their own data for analysis. Network protocols contain more useful information than anyone imagines - both on the customer and the network. For customers; protocol information shows what they like to do, where they are and the quality they experience. For the network; protocol information shows the behaviour of network resources, how optimally they are used, how to increase the quality perceived by the final user, and how to improve the return on investment by increasing income or decreasing costs.

The workshop will study how to analyse data efficiently and give guidance on data collection as well as analysis. Examples analyses covered are:

- Correlation between protocol layers: To show how poor radio coverage affects the dropped call ratio in GSM
- Correlation between technologies: To show how the GPRS radio interface latency affects the throughput experienced by a wireless subscriber during a file download using TCP/IP
- Correlation between interfaces: how a message sent by the MSC to the BSC is lost between the BSC and the BTS

##### About Your Workshop Leader

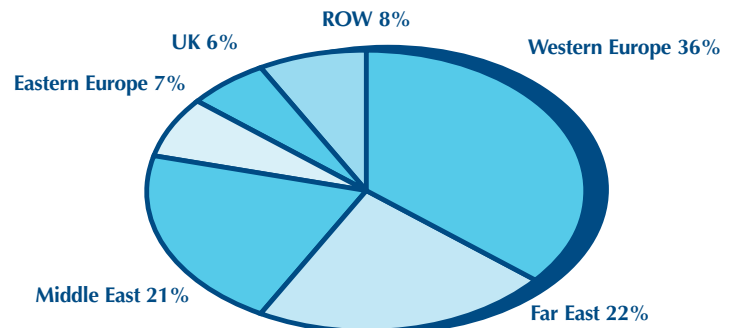
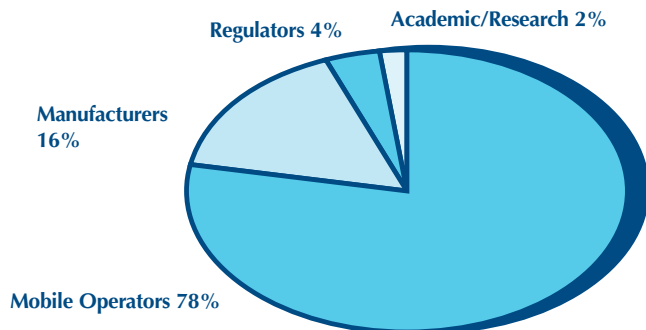
**NetTest** provides mobile network operators and vendors with a complete range of test, monitoring and network optimisation offerings for all mobile networks (GSM, GPRS and UMTS). NetTest solutions enable mobile operators to gain vital insights into the performance of their networks, allowing them to improve network performance, QoS, and increase ROI. For further information, please visit [www.nettest.com](http://www.nettest.com)

## Why Attend GSM/GPRS Performance Measurement?

Network performance is more crucial than ever before in the current economic climate - get it wrong and it could cost you vital customers and revenue, but get it right and you could see voice and data revenues grow as well as improvements in customer retention. This event, dedicated to mobile network performance measurement, is attended exclusively by network optimisation, planning and performance engineers. Last year, 78% of the delegates came from mobile operators - where else would you get the opportunity to hear and learn from the experiences of these people, who come from a wide range of different countries from Europe to the Far East.

## Who Will You Meet?

Based on attendance at our previous GSM/GPRS Performance Measurement events, we expect the following breakdown of delegates:



### We expect the delegates to comprise Directors and Senior Managers of:

Network Performance, RF Engineering, Network Engineering, Network Planning and Design, Radio Planning, Network Optimisation, Network Quality, Network Operations, Network Architecture, Network Strategy, System Architecture, System Engineering, Wireless Infrastructure, Product Management

### 9.00 Registration & Coffee

### 9.30 Opening Remarks From The Chair

#### 9.40 Cost-Effectively Meeting The Performance Requirements Of Both Voice And Data Services In GSM/GPRS Networks

- Identifying the different performance requirements of voice and data services, and identifying the tools and techniques required to meet them
- Examining the effect of data traffic on existing GSM networks in terms of:
  - dynamic channel allocation for GPRS
  - number of transceivers dedicated to GPRS
  - multiple coding schemes
- Examining the impact on network performance of sharing available frequency between data and voice applications

**Robert J Brown**

*Radio Network Expert*

**KPN Mobile**

#### 10.20 Meeting The Challenges Of GPRS Optimisation And Examining The Implications For WCDMA

- Examining the key performance indicators (KPIs) for GPRS and determining their relevance to subscriber perception
- Identifying the most common problems affecting GPRS performance
  - how can these problems best be detected?
- What are the challenges in measuring and optimising WCDMA, and what can be learnt from the lessons of GPRS optimisation?
- Examining real WCDMA network performance and problems and possible solutions in WCDMA networks

**Raymond Wu**

*Assistant Vice President*

**Ascom**

### 11.00 Morning Coffee

#### 11.30 Evaluating And Selecting Appropriate Key Performance Indicators (KPIs) For GPRS Networks

- Examining the KPIs traditionally used to measure GSM performance
  - coverage
  - capacity and call blockage
  - voice quality
  - dropped call rate
- Assessing to what extent these are useful in measuring and monitoring GPRS performance, and determining what additional KPIs are needed
  - peak and average-per-user data throughput
  - average per-channel data throughput
  - packet loss/delay
- Overcoming the challenges of achieving the necessary C/I ratios in GPRS to achieve the desired coding scheme level and data rates

**Sandeep Raina**

*GSM/GPRS Consultant*

**Telsim**

#### 12.10 Using Performance Measurement Data To Optimise Coverage, Capacity And Quality In GPRS Networks

- Understanding how packet-based services interact with GSM voice services
- Developing optimisation tools and procedures to ensure best use of available radio resources
  - defining key performance indicators (KPIs)
  - dimensioning radio resources
- Developing algorithms for network level measurement tools to achieve network optimisation for GPRS
- How effectively is voice QoS being maintained after GPRS services are rolled out? What will be the impact on GSM quality if there is an increase in GPRS service take-up?

*Speaker to be confirmed*

For all speaker announcements, please visit [www.iir-conferences.com/performance](http://www.iir-conferences.com/performance)

### 12.50 Lunch

#### 2.00 Optimus Case Study: Exploiting OMC Statistics, Drive Tests And A-Interface Analysis To Build A Methodology For GPRS Troubleshooting

- Defining a set of generic GPRS key performance indicators and mapping into suppliers' statistics
- Identifying the most effective troubleshooting methods and tools to detect GPRS performance problems
- Analysing the different factors in the radio network that affect GPRS performance
- Setting up analysis and resolution methods to solve problems and improve QoS for GPRS
- Combining different sources to get information and solve performance issues
  - drive tests
  - OMC
  - Gb traces

**Helene Doussineau**

*Cellular Technology Expert*

**Optimus**

#### 2.40 Measuring The Impact Of GPRS On Cell Planning, And The Consequent Impact On Network Performance

- Comparing the differences between cell planning for GSM and GPRS in terms of
  - multiple time slot allocation and asymmetric transmission (uplink/downlink)
  - error protection levels of the different coding schemes
  - handover algorithms
  - cell parameter management
- Identifying the key performance problems in the GPRS air interface
  - cell congestion
  - poor throughput due to cell reselection
  - wrong choice of coding scheme
  - interference
- Selecting the most appropriate performance measurement data for GPRS networks, and integrating this into your cell planning strategy

**Jyrki Penttinen**

*R & D Manager*

**Sonera**

### 3.20 Afternoon Tea

#### 3.40 Solving The Specific Problems Of Performance Measurement For The GPRS Air Interface

- Identifying the key performance problems in the GPRS air interface
  - cell congestion
  - poor throughput
  - wrong choice of coding scheme
  - interference
- Evaluating the suitability of available performance measurement tools for the GPRS air interface
  - Abis trace data
  - drive test data
  - OMC statistics
- Accessing and analysing detailed information from the air interface
  - monitoring transmitter and interference measurements
  - measurement techniques for troubleshooting transmitters and detecting interference problems
- Analysing the impact on performance of multiple technologies in the air interface

*Senior Representative*

**Agilent Technologies**

*"Good event .... As a place to exchange experience it couldn't be better."*

*Saif Bin Ghelaita, Senior Engineer, Mobile Systems, Emirates Telecom*

#### 4.20 Building An Accurate Interference Model To Improve Network Performance For Data Traffic

- Taking into account the impact of multi-service traffic for interference planning
- Ensuring that your interference model generates accurate results for both voice and data traffic
- Selecting the network performance data most likely to produce accurate results to input into the interference model
- Adapting the interference model specifically for the GPRS environment

**Milan Puhalo**

*Radio Network Planning Engineer*

**VIP-Net**

### 5.00 Closing Remarks From The Chair

### 5.10 End Of Conference Day One

### 9.00 Registration & Coffee

### 9.30 Opening Remarks From The Chair

### 9.40 Determining The Drivers For Deploying EDGE In The Migration To 3G To Maximise Overall Efficiency And Network Performance

- Examining the advantages and disadvantages of EDGE for delivery of data services in terms of:
  - efficient use of spectrum
  - data throughput
  - delay
  - packet loss
- How easy is EDGE to implement, and to what extent does it smoothly integrate with existing GSM/GPRS networks?
- Examining experiences of EDGE in the USA, and determining timescales for EDGE deployment in Europe
- Evaluating the cost of EDGE deployment, and calculating ROI

**Virtyt Koshi**

*Senior Analyst*  
**Ovum**

### 10.20 Identifying The Most Useful And Effective Data Sources And Performance Measurements For Benchmarking

- Assessing the benefits and limitations of the different data sources, and combinations of data sources, which can be used for benchmarking
- Determining the extent to which benchmarking can help to quickly identify and rectify potential network problems
- Identifying the key performance indicators (KPIs) required to benchmark GSM performance
  - coverage
  - capacity and call blockage
  - voice quality
  - dropped call rate
- Assessing how benchmarking for GPRS differs from benchmarking for GSM
- Ensuring that KPIs are consistently benchmarked against business objectives to ensure that they directly relate to the core business and bottom line revenue

**Dr Ludger Wiemer**

*Head of Department Quality & Performance Management, Radio Network T-Mobile*

### 11.00 Morning Coffee

### 11.30 Meeting The Technical Challenges Of Optimising i-mode Services In GPRS Networks

- Introducing a KPI database as a platform of knowledge and determining the benefits for network optimisation
- Defining the relevant QoS indicators for i-mode services over GPRS
- Grouping KPIs in terms of:
  - capacity planning
  - fault management
  - quality supervision
- Evaluating and assessing the impact of GPRS QoS on i-mode

**Urs Schlegel**

*Senior Engineer, Network Performance*  
**E-Plus Mobilfunk**

### 12.10 Meeting The Technical And Practical Challenges Of Supporting QoS In GPRS Networks

- Supporting QoS for GSM and GPRS services
- Identifying the most appropriate parameters for QoS in GPRS networks
  - examining Rel 99 QoS parameters
  - examining measurement data
- Overcoming the practical challenges of supporting QoS in GPRS networks

**Mika Sarén**

*Technical Manager*  
**Radiolinja**

### 12.50 Lunch

### 2.00 Measuring The End-User Experience To Ensure That You Meet Their Quality Expectations

- Quantifying the relative importance of the key factors which influence the quality perceived by different user segments
  - coverage
  - dropped calls
  - signal quality
  - speed of data delivery
- Developing performance metrics and KPIs to monitor QoS relative to users' perceptions
- Translating these metrics into meaningful service level information for the end-user

**Samuel Sida**

*Product Manager, Metrica Product Development Group*  
**ADC**

### 2.40 Case Study: Examining How Mobitel Have Implemented Self-Configuring Networks For GSM And GPRS Networks

- Enabling the self-configuring networks to analyse data, identify problems and take appropriate action to optimise network performance
- Implementing comprehensive rules to measure and optimise performance in terms of
  - traffic distribution
  - handover
  - orientation of antennas
- Selecting the optimal frequency planning method for each cell and mixing baseband and synthesised hopping in dual band networks
- Establishing the efficacy and accuracy of self-configuring networks
  - advantages and disadvantages of manual confirmation of automatic adjustments in the system when a self-configuring network is first introduced
- Quantifying the cost benefits of implementing self-configuring networks

**Iztok Saje**

*Technical Advisor*  
**Mobitel**

### 3.20 Afternoon Tea

*"Provided a lot of new ideas on how to approach the subject of Performance Management. It also introduced a new set of problems that must be dealt with in designing and configuring mobile packet networks."*

*Pedro Vasconcelos, Design Engineer, Vodafone Telecel*

### 3.40 Optimising The Performance Of In-Building Coverage Through The Use Of Performance Measurement Tools And Techniques

- Comparing and evaluating different approaches to testing and measuring in-building systems
  - computer software tools
  - field measurements
  - using past design experience
- Determining how testing and measurement for in-building systems differs from that for the macro network
- Evaluating the different computer software testing and measurement prediction and performance tools for in-building systems
- Assessing the practicality and cost implications of manually measuring in-building coverage during on-site inspections
  - weight of testing equipment
  - gaining access to buildings
  - staff costs
- Meeting the testing and measurement requirements for data traffic on indoor systems
  - how will this differ from the requirements for voice traffic?

**Derek Paton**

*Director of Sales Support*  
**LGC Wireless**

### 4.20 Evaluating The Role Of Radio Resource Management In Network Performance

- Integrating physical level parameters (bit-rate, modulation, power, etc.) and link-level parameters (MAC protocol, scheduling, etc.) to optimise the performance of the radio access network
- Using analysis and complex simulation models to investigate algorithms for:
  - power management
  - interference cancellation
  - traffic control
- Case study: examining specific examples of radio resource dimensioning models and determining their efficiency at improving network performance

**Mehmet Beyaz**

*Quality & Performance Manager*  
**Telsim**

### 5.00 Closing Remarks From The Chair

### 5.10 End Of Conference Day Two

# QoS For All-IP Mobile Networks

9.00 *Registration & Coffee*

9.30 **Opening Remarks From The Chair**

## 9.40 **The Evolution To All-IP: Determining How QoS Is Being Developed To Support All-IP Mobile Networks**

- Identifying the technical and commercial drivers for the migration to an all-IP radio access and core network
  - improved functionality
  - fixed-mobile convergence
  - efficiency
  - value chain enhancement
  - WLANs and non-cellular mobile developments
- Identifying and overcoming the particular problems of supporting QoS for all-IP mobile networks
  - packet loss/delay
  - jitter
  - handover
  - signal loss
  - real-time service support
- Examining QoS and mobility management interaction, and the need for end-to-end QoS
- Examining the status of standardisation for all-IP mobile QoS within 3GPP and IETF
- Outlining current and future QoS solutions and timescales for deployment in all-IP mobile networks

OPERATOR

**Dave Wisely, Head of UMTS Research, BTextact Technologies**

## 10.20 **Developing The Optimum Technical Solution For Guaranteeing End-to-End QoS In All-IP Mobile Networks**

- Examining technical strategies for implementing QoS
  - in the core
  - in the radio access network
  - integration with both networks
- Ensuring protocol compatibility to facilitate smooth integration for QoS across the radio access network and the IP core
- Analysing the technical and strategic challenges of implementing QoS across a network composed of several different domains
- Identifying the optimum QoS mechanism to achieve end-to-end QoS for mobile networks
  - examining strategies to combine different mechanisms in different parts of the network

**Vilho Raisänen, Chief Engineer, QoS, Nokia Networks**

11.00 *Morning Coffee*

## 11.30 **Determining The Feasibility Of Supporting QoS In An All-IP Radio Access Network**

- Examining the latest developments in all-IP radio access networks
  - what is being done with regard to QoS?
- Analysing the performance characteristics of the radio access network which may cause problems for QoS and determining strategies to overcome them
- Overcoming the challenges of integrating QoS in core and radio access networks to prevent bottlenecks and support end-to-end QoS
- Examining the ability to support QoS of the different protocols for use in the radio access network

**Bosco Fernandes**

*IPv6 Tech. Directorate Member, EC - IPv6 Phase II Task Force  
Vice President, Siemens*

## 12.10 **Overcoming The Challenges Of Measuring Speech Quality On A VoIP Network**

- Identifying the key factors affecting voice quality in mobile networks
  - echo
  - noise levels
  - signal levels
- Identifying the attributes which an advanced testing system for measuring QoS in a VoIP network should include:
  - real time operation
  - ability to send a pre-defined sample from sender to receiver
- Developing algorithms that can reflect how a human subscriber would evaluate the quality of received speech
- Maintaining voice quality during the migration to data centric networks
- Overcoming the challenges of optimising voice traffic in 3G networks

OPERATOR

**Harald Klaus**

*Head of Quality Assurance & Web Services*

**T-Systems**

12.50 **Lunch**

## 2.00 **Optimising 3G Networks To Achieve Optimum Performance**

- Examining the implications for network performance of the migration to 3G networks
- Using Optimal Cell Planning to attain operator defined KPIs throughout and after deployment
  - initial planning stage - selecting the most appropriate vendor site plan
  - pre-launch - optimising to increase quality and coverage
  - post launch - maintaining peak performance throughout the network lifecycle
- Managing multi-technology GSM/GPRS/UMTS networks on one platform

**Roni Abiri**

*CTO*

**Schema**

## 2.40 **Examining The Effectiveness Of IPv6 To Support QoS In 3G Networks**

- Determining the extent to which 3G networks are driving the roll-out of IPv6
- Examining the advantages of IPv6 for deploying multimedia services
  - removes the need for address translation
  - increased address space and more straightforward addressing
  - built-in security features
- Determining the ways in which IPv6 will improve QoS and security for 3G networks
- Determining timescales for widespread deployment of IPv6 in mobile networks and the implications for QoS
  - what will be the impact of interworking IPv4 with IPv6 on QoS for mobile networks?

**Latif Ladid, President, IPv6 Forum; Trustee, Internet Society; Chair, IPv6 Task Force**

## 3.20 **PANEL DISCUSSION**

What are the technical and commercial drivers for the migration to an all-IP radio access and core network? When is it likely to happen? And what are the implications for mobile network performance?

4.05 **Closing Remarks From The Chair**

4.15 **End Of Conference Day Three**

PANEL

*"Excellent perspective of what is happening in the GPRS domain."*

*Anuj Kumar, General Manager, Convergelabs Corp*

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# GSM/GPRS Performance Measurement

CG2077

Monday 24th - Wednesday 26th March 2003, Mayfair Conference Centre, London

## Post-Conference Workshop

CG2077W

Thursday 27th March 2003, Venue To Be Confirmed, London

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Workshop Venue (27th March): To Be Confirmed

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