XIII REGULATEL-BEREC Summit Meeting
(Buenos Aires-Argentina, 21-22 July 2014)

Quality of Service and Quality of Experience in Fixed-Line and Mobile Multimedia Services

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Structure of ITU

Plenipotentiary Conference

ITU Council

General Secretariat

ITU-R (radiocommunication)
- WRC & RA

ITU-D (development)
- WTDC

ITU-T (standardization)
- WTSA
Structure of ITU-T

WTSA

TSAG & Review Committee

Study Group x

- Working Party 1/x
  - Question 1/1
  - Question 1/2
  - Question 1/3

- Working Party 2/x

- Working Party 3/x

Study Group y

- Working Party 1/y
  - Question 1/1

- Working Parties ...

Study Groups ...
The Evolution of ITU-T SG 12

- Established in 1957
  - Subjective testing & telephone standards
- Since the early 1990s work in SG 12 has expanded
  - Into many new technology areas
    - ATM
    - VoIP
    - Multimedia
    - Digital wireless
    - IP QoS classes
    - Ethernet
    - IPTV, etc.
    - Network Performance
    - Resource Management
- Since 2008 SG12 was given responsibility for
  - Operational aspects of telecommunication network service quality
  - Responsibility for the QoS Development Group (QSDG)
Current SG 12 Mandate

- Performance, QoS and QoE

- Responsible for Recommendations on performance, quality of service (QoS) and quality of experience (QoE) for:
  - full spectrum of terminals, networks and services
  - ranging from speech over fixed circuit-based networks
  - to multimedia applications over networks that are mobile and packet based

- Included are:
  - operational aspects of performance, QoS and QoE
  - end-to-end quality aspects of interoperability
  - development of multimedia quality assessment methodologies, both subjective and objective.

- SG 12 is the Lead SG on:
  - quality of service and quality of experience
  - driver distraction and voice aspects of car communications

SG 12 Leading Team

- **Chairman**
  - Kwame Baah-Acheamfuor (Ghana)

- **Vice Chairmen**
  - Paul Barrett (United States)
  - Vincent Barriac (France)
  - Gamal Amin Elsayed (Sudan)
  - Hyung-Soo Kim (Republic of Korea)
  - Al Morton (United States)
  - Qi Feng (China)
  - **José Guadalupe Rojas Ramírez (Mexico)**
  - Akira Takahashi (Japan)
  - Hassan Talib (Morocco)

- **TSB Support**
  - Hiroshi Ota, Engineer
  - Emmanuelle Labare, Assistant
Working Parties

- **WP 1 Terminals and multimedia subjective assessment**

  **CHAIR:** Lars Birger Nielsen (Denmark)
  **VICE CHAIR:** Gunilla Berndtsson (Sweden)

  **Q3/12** Speech transmission characteristics of communication terminals for fixed circuit-switched, mobile and packet-switched (IP) networks

  **Q4/12** Hands-free communication and user interfaces in vehicles

  **Q5/12** Telephonometric methodologies for handset and headset terminals

  **Q6/12** Analysis methods using complex measurement signals including their application for speech enhancement techniques and hands-free telephony

  **Q7/12** Methods, tools and test plans for the subjective assessment of speech, audio and audiovisual quality interactions

  **Q10/12** Conferencing and telemeeting assessment
Working Parties

WP 2 Objective models and tools for multimedia quality

CHAIR: Paul Barrett (United States)
VICE CHAIR: Vincent Barriac (France)

Q8/12 E-Model extension in wideband transmission and future telecommunication and application scenarios

Q9/12 Perceptual-based objective methods for voice, audio and visual quality measurements in telecommunication services

Q14/12 Development of parametric models and tools for multimedia quality assessment

Q15/12 Objective assessment of speech and sound transmission performance quality in networks

Q16/12 Framework for diagnostic functions and their interaction with external objective models predicting media quality
Working Parties

- **WP 3 Multimedia QoS and QoE**
  - **CHAIR:** Paul Coverdale (China)
  - **VICE CHAIR:** Akira Takahashi (Japan)

- **Q11/12** Performance interworking and traffic management for Next Generation Networks
- **Q12/12** Operational aspects of telecommunication network service quality
- **Q13/12** QoE, QoS and performance requirements and assessment methods for multimedia
- **Q17/12** Performance of packet-based networks and other networking technologies
Overseen by SG12

Q1/12
SG 12 work programme and QoS/QoE coordination in the ITU-T

Q2/12
Definitions, guides and frameworks related to QoS/QoE

QoS Development Group
- Yvonne Umutoni, Chair

Regional Group for Africa
- Gamal Amin Elsayed, Chair

CarCom Focus Group (closed in 2013)
- Hans Gierlich, Chair

Driver Distraction Focus Group (closed in 2013)
- Scott Pennock, Chair
SG 12 Recommendations

- **E-Series:** Overall Network Operation, telephone service, telephone operation and human factors
  - E.420-E.479, E.800-E.859

- **G-Series:** Transmission Systems and media, digital systems and networks
  - G.100-series, except G.160-, G.180- and G.190-series, G-1000 series

- **I-Series:** Integrated Services Digital Network

- **P-Series, except P.900-series:** Terminals, subjective and objective test methods

- **Y-series:** Global Information infrastructure, Internet Protocol aspects and Next Generation Networks
  - Y.1220-, Y.1530-, Y.1540-, Y.1560-series
Definition of QoS

As per ITU-T Recommendation E.800, quality of service is:
“Totality of characteristics of a telecommunications service that bear on its ability to satisfy stated and implied needs of the user of the service.”
Four Viewpoints of QoS
(ITU-T Rec G.1000)
QoS Interfaces (ITU-T Rec E.800)
Recently approved Recommendations

- E. 803: “Quality of service parameters for supporting service aspects”
- E.804: “QoS Aspects for Popular Services in Mobile Networks”
- E.807: “Definitions and associated measurement methods of user-centric parameters for call handling in cellular mobile voice service”.

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Recently approved Recommendations

- ITU-T Supplement.9 (E. Series): “Guidelines on Regulatory Aspects of QoS” and some best practices worldwide

- Y.1545: Roadmap for the quality of service of interconnected networks that use the Internet Protocol
Proposed QoSphere

C-QoE: Customer experience
QoBiz: Revenue and margin
Op-Eff: Operational efficiency

ASSESSED QoS
QoE: Quality of experience
SAT: Satisfaction
CHURN: Attrition rate
EXP: Expectation

PERCEIVED QoS
QoP: QoS perceived
QoS: QoS required
QoS: QoS offered
QoS: QoS delivered

INTRINSIC QoS
NP: Network performance
CoS: Class of service
GoS: Grade of service
Next Meeting

- ITU-T SG12 meeting
- 2nd to 11th September, 2014
- Geneva, Switzerland
Welcome to SG12