Relationship between Qualinet and ACROSS-leveraging Qualinet

Peter Pocta, University of Zilina, Slovakia
Outline

- A quality definition
- An overview of quality assessment principles
- An introduction to Qualinet
- Common themes across Qualinet and ACROSS
- How Across can leverage knowledge obtained in Qualinet
A quality definition

Quality accor. to Jekosch:

- **is the result of the judgment of the perceived composition of an entity with respect to its desired composition** [Jekosch, U.: Voice and Speech Quality Perception: Assessment and Evaluation, Springer, 2005]

- **Perceived composition**: Totality of features of an entity. Signal for the identity of the entity to visible to the perceiver

- **Entity**: Material or immaterial object under observation

- **Desired Composition**: Totality of features of individual expectations and/or relevant demands and/or social requirements

- **Feature**: Recognizable and nameable characteristic of an entity

![Fig. 1: A schematic description of quality event](especially speech quality event)

(adopted from Jekosch 2005)
Quality according to Qualinet:

- is the outcome of an individual’s comparison and judgment process.
  - It includes perception, reflection about the perception, and the description of the outcome.
  - Quality is considered here in terms of the evaluated excellence or goodness, the degree of need fulfillment, and in terms of a “quality event” (see Jekosch, 2005).
  - Event: An observable occurrence. An event is determined in space (i.e. where it occurs), time (i.e. when it occurs), and character (i.e. what can be observed).

from Qualinet White Paper on Definitions of Quality of Experience
A overview of quality assessment principles

- **Subjective Testing:**
  - Test subjects (group of people, mainly around 24)
  - Advantage: higher validity and reliability of results
  - Drawback: Time-consuming and costly

- **Objective Testing (Signal-based):**
  - Algorithms (PESQ, P.563, POLQA (P.863), etc.)
  - Good correlation with subjective tests (PESQ: 0.9; P.563: 0.7)

- **Parametric Testing (Parameter-based):**
  - Parametric or computational models (based on equations, E-model)
  - Mainly, weaker correlation with subjective test than objective methods (highly depends on impairment)
An introduction to Qualinet

• General information:
  – COST IC1003 action
  – European Network on Quality of Experience in Multimedia Systems and Services
  – Involving 27 COST countries, 1 COST Near Neighbour Countries (Montenegro) and 5 COST International Partner Countries (USA, Canada, Australia, Japan, Singapore)
  – Work has been organized in 5 Working Groups (WG):
    • WG1 - Application areas
    • WG2 - Mechanisms and models of human perception
    • WG3 - Quality metrics
    • WG4 - Databases and validation
    • WG5 - Standardization and dissemination
  – To focus on special tasks, each WG has created a Task Force (TF) dedicated to a particular task, for instance TF 2D/3D video and streaming created by WG1 for dealing with 2D/3D video and streaming
Common themes across Qualinet and ACROSS

• Most relevant Qualinet TFs for ACROSS:
  – QoE management from a networking perspective
  – Machine Learning for objective assessment of QoE
  – Cloud-Web-applications
  – 2D/3D video and streaming
  – Gender as a QoE Influencing Factor
  – Crowdsourcing

The objectives and other details related to the above-listed TFs can be found in the embedded document:
Common themes across Qualinet and ACROSS

• Qualinet databases:
  – freely accessible under: http://dbq.multimediatech.cz/ (registration required)
  – 201 databases (image quality, video quality, eye-tracking, audiovisual, etc.)

The current list and basic descriptions of the available Qualinet datasets can be found in the embedded document:
Qualinet and ACROSS

• How we can benefit from Qualinet?

- Access to & Building on knowledge obtained in Qualinet, especially in the most relevant TFs
- Deploying Qualinet databases in a development process of QoE monitoring models in ACROSS

- Creating TF (> 1?) focusing on QoS/QoE issues in ACROSS
Qualinet and ACROSS

• TF focusing on QoS/QoE issues

- Proposed by Qualinet members, namely Hugh Melvin, Peter Pocta, Lea Skopin-Kapov, Tobias Hossfeld and Andrej Zgank

- **Aim:** To examine & develop a range of research topics in QoS/QoE area

- **Hot research topics to be prospectively covered by this TF proposed by the founding group (telco TUE evening):**
  - A context-based QoE monitoring
  - A service-specific QoE estimation models for SDN
  - A cross-layer QoE management
  - Time-aware applications, computers and communication systems
Thank you for your attention!

Questions?