

Session III: New ETSI Model on Wideband Speech and Noise Transmission Quality Phase I Results

ETSI Workshop on Speech and
Noise in Wideband
Communication

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Technical and general solutions

- ❑ **transmission simulation (task 1)**
 - Replacement of real terminals by simulations (recording + signal processing)
 - Selection of NISTNet for IP degradations
 - Definition of ranges of impairment and simulation values
- ❑ **Preparation of noisy and processed speech signal databases (task 2)**
 - Successful re-use of STF 273 methodology
 - Master and clear, reproducible, application of each simulation step
- ❑ **Practical application of P.835 subjective methodology (task 3)**
 - Suitable for the impairments to assess for SFT 294
 - Two subjective labs involved

- ❑ **Finally, all needed material for Phase II has been provided**

Databases

- ❑ The final database recorded for task 3 contains 4320 conditions corresponding to all the possible combinations of the factors taken into account.
- ❑ It is too large to be used at it is for a subjective experiment, but is available if necessary for other means (as unknown database).
- ❑ The databases recorded during task 2 cover also intermediate steps (clean speech, noisy speech, processed speech before IP transmission), that can be re-used
- ❑ The subjective database is divided for Phase II
 - 70% for training
 - 30% for validation
- ❑ Two languages are covered : Czech and French

Some shortcomings about P.835 application

- ❑ **Setup for reproduction**
 - **definition of artificial ear**
 - **Acoustical field equalisation type**
- ❑ **Differences between recordings used by subjective laboratories, due to unclear statements in the standard**
 - **Levels equalisation (problem for training Phases II's model))**
 - **Length of samples (needs to be clarified, 4 s is too short)**
- ❑ **Need for homogeneous IP packet loss**
- ❑ **Need for a question on intelligibility ?**

- ❑ **All these remarks have been posted to IUT-T Q.7/12, in charge of the development and maintenance of subjective methodology standards, including P.835, and will help update these standards**

Problems and corrective actions

- ❑ No unresolved issue
- ❑ Selection and production of original sentences
 - Instead of using recordings directly obtained from STF 273, both subjective laboratories provided original clean speech samples to Head Acoustics, which processed them according to the methodology developed by STF 273.
- ❑ Simulation of noise reduction in terminals
 - When launching this STF, TC STQ officials thought that it was possible to find real terminals for IP wireless services (UMTS mainly) on which it would be possible to activate or not noise suppression functionalities.
 - But in fact, such terminals did not exist, and this is why it has been necessary to replace it by a noise suppression algorithms simulation, realised by experts from France Télécom
- ❑ Network simulation and recording
 - The size and the complexity of the database settings led to some technical problems
 - Re-recording of a big part of the database was necessary, in order to correct some bad quality on many samples
- ❑ Check of recordings
 - The problems mentioned before have been detected through heavy subjective expert listening on the whole database. In fact, most of the time spent by the subjective experts for STF 294 has been devoted to this task, and to the conduction of tests.
- ❑ Quality range covering
 - The selection of noises, voice coders, noise suppression techniques, and so on, has been made in order to restrict the amount of samples to be recorded. Finally, the experts came quite easily to a consensus on the conditions to retain, which are covering a wide range.
- ❑ Selection of a limited amount of samples for subjective tests

Thank you for your attention !

Questions ?