

## **Curriculum Vitae Dr. John G. Beerends, version January 2024**

John Beerends received a degree in electrical engineering from the HTS (Polytechnic Institute) of The Hague, The Netherlands, in 1975. After working in industry for three years he studied physics and mathematics at the University of Leiden where he received an M.Sc. degree in 1984. In 1983 he was awarded a prize of Dfl 45000 by Job Creation for the further development of his patented asymmetric loudspeaker enclosure design.

From 1984 to 1989 he worked at the Institute for Perception Research where he received a Ph.D. from the Technical University of Eindhoven in 1989. The main part of his doctoral work, which deals with pitch perception, was published in the Journal of the Acoustical Society of America. The results of this work led to a patent on a pitch meter by the N.V. Philips Gloeilampenfabriek.

From 1986 to 1988 he worked on a psycho-acoustically optimized loudspeaker system for the Dutch loudspeaker manufacturer BNS. The system was introduced at the Dutch consumer exhibition FIRATO in 1988.

In 1989 he joined the KPN Research where he worked on audio and video quality assessment, audio-visual interaction, and on audio coding (speech and music). This work led to several patents and two measurement methods for objective, perceptual, assessment of audio quality which he developed together with Jan Stemerding. The first one dealt with telephone-band speech and was standardized in 1996 as ITU-T Recommendation P.861 (Perceptual Speech Quality Measure, PSQM), the second one with wideband audio and was integrated into ITU-R Rec. BS.1387 (1998, Perceptual Evaluation of Audio Quality, PEAQ). Most of the work on audio quality (speech, music and audiovisual interaction) was published within the Audio Engineering Society and the ITU.

From 1996 to 2002 he worked with Andries Hekstra on the objective measurement of the quality of video and speech. The work on speech quality, partly carried out with researchers from British Telecom, was focussed on improving PSQM and was standardized in 2001 as ITU-T Rec. P.862 (Perceptual Evaluation of Speech Quality, PESQ). The work on video quality led to several patents and a measurement method for objective, perceptual, assessment of video quality, standardized in 2008 by the ITU-T as Rec. J.247 (Perceptual Evaluation of Video Quality, PEVQ).

In January 2003 he joined TNO, which took over the research activities from KPN, where he worked on the objective measurement of speech intelligibility, (super) wideband speech quality, degradation decomposition, hearing aid quality, videophone quality and data chirping techniques. The main focus was on speech quality and intelligibility assessment for the normal hearing and hearing impaired. In the period 2006-2007 he worked on the development of the Perceptual Hearing Aid Quality Measure (PHAQM) which proved to be the best predictor of speech quality in a benchmark carried out by a consortium of leading hearing aid manufacturers. In the period 2003-2010 he worked on the development of the follow up of PESQ P.862. In a joint effort with OPTICOM and SwissQual this work resulted in ITU-T Rec. P.863 (Perceptual Objective Listening Quality Assessment, POLQA) in 2011. In 2014 he started a co-operation with Richard van Everdingen (Delta Sigma Consultancy) on extending the perceptual measurement approach towards the acoustic domain (loudspeaker reproduction quality, including the impact of the reproduction room) and optimal reproduction of music with a focus on the feeling of immersion.

John Beerends is the (co-) author of more than 100 (conference) papers/ITU contributions and 35 patents. In 2003 he received an AES fellowship award for his work on audio and video quality measurement.