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**TKN****Telecommunication  
Networks Group**Head of Group  
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## An Adaptive Data-Link to Optimise Interactive Voice over Wireless Local Networks

### 1. Summary

Users demand for a high quality wireless Internet. However, the wireless access is the bottleneck in the world-wide communication systems, since wireless links often have small capacity and a temporally varying channel quality. Thus, optimising the transmission performance of wireless Internet is promising.

The Internet allows so offer various multimedia services, for which the transmission mechanisms should be analysed and optimised individually to achieve best performance. This project exams, how the quality of interactive language over wireless of local area networks (IEEE 802,11) can be improved. We want to adapt the data link to the characteristics of the channel (utilization and error rate) and the speech properties.

One novel part is the *quality predictor*, which takes into account the current speech properties and the short-term transmission history to select for each packet an appropriate transmission mechanism in order to optimise the service quality. The service quality of interactive language depends on the perceptual speech quality, the mouth-to-ear delay and the transmission costs.

### 2. Project Financing

This project is within the DFG priority program "Adaptability in Heterogeneous Communication Networks with Wireless Access" ([AKOM](#)).

### 3. Contact

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### 4. Software and Demonstrations

- [Mongolia: An Auditory Testing Environment to Study the Importance of a VoIP Packet](#)
- [An IEEE 802.11e EDCF and CFB Simulation Model for NS-2.26](#)

## Publications:

### Journal Papers and Book Chapters [related BIB-entry](#)

- [H. Sanneck, W. Mohr, L. Le, C. Hoene, and A. Wolisz](#), "[Quality of Service Support for Voice Over IP over Wireless](#)", In S. Dixit and R. Prasad, editors, *Wireless IP and Building the Mobile Internet*, chapter 10, Artech House, Norwood, MA, USA, December 2002.

### Conference Proceedings [related BIB-entry](#)

- [C. Hoene, S. Wiethölter, and A. Wolisz](#), "Predicting the Perceptual Service Quality Using a Trace of VoIP Packets", In *Proc. of Fifth International Workshop on Quality of future Internet Services (QofIS'04)*, Barcelona, Spain, September 2004. ([PDF](#))
- [C. Hoene, H. Karl, and A. Wolisz](#), "A Perceptual Quality Model for Adaptive VoIP Applications", In *Proc. of International Symposium on Performance Evaluation of Computer and Telecommunication Systems (SPECTS'04)*, San Jose, California, USA, July 2004, Paper won the Best Paper Award of the conference. ([PDF](#))
- [C. Hoene and E. Dulamsuren-Lalla](#), "Predicting Performance of PESQ in Case of Single Frame Losses", In *Proc. of MESAQIN 2004*, Prague, CZ, June 2004 MESAQIN 2004 - Measurement of Speech and Audio Quality in Networks, ([Slides](#)). ([PDF](#))
- [C. Hoene, A. Günther, and A. Wolisz](#), "Measuring the Impact of Slow User Motion on Packet Loss and Delay over IEEE 802.11b Wireless Links", In *Proc. of Workshop on Wireless Local Networks (WLN) 2003*, Bonn, Germany, October 2003. ([PDF](#))
- [A. Aguiar, C. Hoene, J. Klaue, H. Karl, H. Miesmer, and A. Wolisz](#), "Channel-aware Schedulers for VoIP and MPEG4 based on Channel Prediction", In *Proc. of 8th Intl. Workshop on Mobile Multimedia Communications (MoMuC'03)*, October 2003. ([PDF](#))
- [C. Hoene, B. Rathke, and A. Wolisz](#), "On the Importance of a VoIP Packet", In *Proc. of ISCA Tutorial and Research Workshop on th Auditory Quality of Systems*, Herne, Germany, April 2003. ([PDF](#))

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- [S. Wiethoelter and C. Hoene](#), "Design and Verification of an IEEE 802.11 eEDCF Simulation Model in ns-2.26", Technical Report TKN-03-019, Telecommunication Networks Group, Technische Universität Berlin, November 2003. ([PDF](#))

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- o [C. Hoene](#), "An Experimental Approach to WLAN Research - A Short Tutorial", ESF Workshop, La Spezia, Italy, October 2002.  
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## Miscellaneous [related BIB-entry](#)

- o [S. Möller and C. Hoene](#), "Information About a New Method For Deriving the Transmission Rating Factor R From MOS in Closed Form", ITU - Telecommunication Standardization Sector, May 2002, Temporary Document for the study group 12.  
([PDF](#))

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