

# Front-end Audio Processing: Reflections on Issues, Requirements, and Solutions

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Since its start in 1989, International Workshop on Acoustic Echo and Noise Control (IWAENC) has been an excellent venue for presenting and discussing work and progress of echo cancellation (acoustic/network) as well as noise suppression.

In previous workshops and conferences, it has been proclaimed that the “AEC problem has been solved.” If this were true, why do we still see so much activity in this field, and the larger one of front-end voice processing, at both universities and commercial-industrial enterprises?

Many times, industry needs to do more serious investigations than is possible in the time allotted to a project; an issue that is typically not a problem for universities. Universities on the other hand, sometimes need guidance from industry on what actual important problems that need to be solved.

With these themes in mind, an objective of this keynote is to discuss directions where industry requirements are pushing the boundaries of front-end processing technology and to look at the challenges such efforts pose. I will also take a look at the progress made in these fields over the years, and share some of my experiences and stories in developing and deploying these technologies in commercial products. Hopefully, these ideas may inspire new research in the field of front-end voice processing.



**Tomas Gaensler** received his M.S. degree in Electrical Engineering and the Ph.D. degree in signal processing from Lund University, Lund, Sweden. He also held a position as an Assistant Professor at Lund University and served as a lecturer and teacher in signal processing. After a postdoc position at Bell Labs, Lucent Technologies he joined Bell Labs as a full time member of technical staff and later worked at Agere Systems, a spin-off from Lucent Technologies' Microelectronics group. He has more than 40 published papers, conference, and workshop contributions. Dr. Gaensler also co-authored the books “Advances in Network and Acoustic Echo Cancellation, and “Acoustic Signal Processing for Telecommunication. Tomas Gaensler is currently with mh acoustics, Summit, NJ, USA.