



INFORMATION ON NEXT MEETING

HIGH RESOLUTION AUDIO ***- 24bit and 96 kHz***

Thursday 25th of May 2000, at 17h30 at Hotel Alfa, Leupanstrasse 15, 3000 Bern

SPEAKERS: Markus Erne, Scopein Research, Aarau
Daniel Weiss, Weiss Engineering, Uster
Albrecht Gasteiner, Omniphon, Basel

ORGANIZER: Markus Erne, Scopein Research

LANGUAGE: German

Markus Erne will start with a presentation on the sampling and quantization process, involved in High-Resolution Audio. He will emphasize some technical and physical limits that have to be considered for 24-Bit, 96 kHz Systems. Although Clock-Jitter, Intersymbol Interference and the idle noise of the analog front-end may limit the performance of a conversion system, High resolution audio offers some nice properties to the user in terms of dynamic range and additionally bandwidth. Markus will also focus on possible applications e.g. lossless and lossy compression of HR-Audio signal. (presentation duration ca. 40 Min.)

Daniel Weiss will concentrate on the impact of higher sampling frequencies in digital signal processing devices such as parametric EQ's and Compressor-Limiters. He will attempt to find an explanation why there is a sonic difference between 48 kHz-based systems and 96 kHz technology. Daniel additionally can report from the experience of numerous customers in the mastering and recording business, which are using his 96 kHz technology. (presentation duration: ca. 40 Min.)

Albrecht Gasteiner then will talk to the audience more as a user and recording engineer and he will raise some interesting questions. When does it make sense to use HR-audio ?

What are the benefits of using HR-audio technology ? Albrecht will also report from his experience in recording at 24 Bits/96 kHz and he will play some examples where the audience will be able to judge by their own ear whether there might be a difference or not. (presentation duration: ca. 25 Min.)

Participants may then join for dinner at the Restaurant of the Hotel Alfa where lively discussions on High resolution audio may continue.

Biographical Notes

Markus Erne was born in Switzerland and in 1981, he earned an MS-degree in electrical engineering and digital signal processing from the Swiss Federal Institute of Technology. In 1987, he joined the R&D-department of Studer-Revox where he was in charge of the design of DSP-algorithms for digital audio workstations and digital mixing consoles as well as of high resolution digital audio converters. In 1990, Mr. Erne founded Scopein Research, an engineering company active in the field of analog and digital signal processing. Starting with the development of a digital Equalizer for the Wembley-Stadium in London, of a Professional, Portable 4-Head-DAT-recorder, Scopein Research was involved into the realization of an MPEG-2 audio coder, used for a PCMCIA-based digital announcement system in trains and elevators. Mr. Erne was one of the founders of Merging Technologies SA and designed and implemented the digital audio signal processing algorithms of the Pyramix-Digital audio workstation. Since 1992, Mr. Erne serves as lecturer in digital signal processing at the Zürcher Hochschule Winterthur and he is an instructor in digital audio technology for the Swiss Broadcasting company as well as for various DSP-manufacturers.

Mr. Erne will complete his PhD-thesis, entitled „Signal Adaptive Audio Coding using Wavelets and Rate Optimization“ within the next few months and his additional research interests are in the field of lossless audio compression and watermarking of audio signals. Mr. Erne is vice-chairman of the Swiss AES-section, he is chairman of the Swiss AES-examining committee for sound technicians, he is a member of the ISO-MPEG audio sub-committee and a member of IEEE.

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HIGH RESOLUTION AUDIO

Daniel Weiss received in 1979 a BSEE from the School of Engineering Rapperswil, Switzerland

From 1979 to 1985 he worked for Willi Studer AG, PCM Lab, on the design of a sampling frequency converter and digital audio electronics for digital tape recorders.

In 1985 he formed Weiss Engineering Ltd. where he has been working until today on the design and manufacturing of digital audio equipment, mainly for mastering studios worldwide, including the design of highly acclaimed digital audio hard- and software, such as equalizers, compressors, de-essers, mixing desks, converters etc. Pioneering work in 96kHz audio processing.

He is a Member of the Audio Engineering Society and the IEEE.

Albrecht Gasteiner completed his music studies (conducting, piano, violin, organ, vocal) at the „Akademie Mozarteum“ at Salzburg. He was a member of the „Salzburger Festspiele“ and of the „Wiener Kammerorchester“ and he played in several concerts and broadcast recordings as a jazz-drummer. He has been known as an audio pioneer in Switzerland for years and in 1970 he was the first to record in quadrophonic-technology and he additionally recorded the first digital recording in Switzerland in 1979. In 1981 again he was among the first to present the revolutionary Compact Disk. His huge experience as a producer, chief recording engineer and „Tonmeister“ allowed him and his company OMNIPHON to produce numerous titles on Vinyl and on CD. Albrecht Gasteiner additionally is well known for his writing skills, as critic music reviewer, from writing technical articles, from presentations and invited lectures and from radio and TV interviews as well as from the „DVD-Forum Schweiz“ which he initiated.

CALENDAR

Joint AES Swiss Section and Swiss Acoustics Society Meeting on the topic
“Surround Sound Monitoring”

On Thursday 15th of June 2000, at SDS, Ostermundigen (Bern)

Speakers: Terry Nelson, Studio Equipment
Anthony Morris, AGM Digital
Hans Künzi, SDS Ostermundigen
Christian Hugonnet (Moderator)

Organizer: Terry Nelson, Studio Equipment

REPORT ON PREVIOUS MEETING

DIGITAL AUDIO BROADCASTING IN SWITZERLAND

Thursday 23rd of April 2000, at 17h30 at Studer Professional Audio AG, Regensdorf

SPEAKERS: Bernhard Baumgartner, Multimedia Communication Systems, Hirschmann Austria GmbH
Michael Gabriel, Media Services Distribution, SRG SSR idée Suisse, Zurich
Pius Paulin, Radio Rumantsch, Chur
George Wismer, Studer Professional Audio, Regensdorf
ORGANIZER: Alex Ruegg, Kudelski/Nagravision S.A., Zurich

Mr. Ruegg welcomed about thirty attendants gathered for the Swiss Section Meeting on the topic „Digital Audio Broadcasting in Switzerland“ at Studer Professional Audio AG, Regensdorf. The talks were organized in a logical order, with DAB technology introduced first. The focus was then centred on the transmission/distribution of DAB signals after which the specific situation and requirements for the distribution in Switzerland were explained in detail. The listeners were then confronted with the needs and wishes of the broadcasters. At this point the commercial issues were more specifically discussed creating an interesting discussion. There then followed a presentation of the technical situation in a broadcast house, including the requirement aspects for the broadcast automation system, which led into the next topic of how to create content for DAB, i.e. digital audio and addition services. The round-up was a live demonstration of DAB programming and receiving.

Here a short story from the organizer: The April newsletter where this meeting was announced found also its way to the mailbox of Mr. Knäpple, who was a member of the AES up until five years ago. Mr. Knäpple is heading the product management at Hirschmann in Austria and was attracted by the topic. In a very short time he was able to organize an excellent speaker, Mr. Bernhard Baumgartner, Product Manager, Multimedia Communication Systems, Hirschmann Austria GmbH, Rankweil (A) to introduce the technology used for Digital Audio Broadcasting. The “Last minute phenomenon” was also extended to his arrival courtesy of a huge traffic jam on the Zurich Nordring. A breathless Mr. Baumgartner was nonetheless able to start exactly on-time.

Mr. Baumgartner begun his two-part talk with a comparison between existing FM networks and the Eureka 147 DAB System which is summarized with in the comparison table below:

FM	DAB
Analogue Signal transmission	Digital Signal transmission
No error protection possible	Forward Error Correction used
Multi-path reception causes distortions	Multi-path reception improved system performance
Adjacent transmitters have to be operated on different frequencies	Designed for single frequency networks
Sound quality strongly depending on the field strength	Excellent sound quality in the complete coverage area
Designed for audio transmission only	Designed for audio and data transmission

Mr. Baumgartner closed the first part with the following statements about DAB:

- DAB combines highest network and frequency efficiency
- Distortion free crystal clear sound
- Optimized design for data transmission

A short summary of the analysis of the DAB development in Europe\ was given. It should be known that different standards for digital audio broadcasting exist. As a reminder, these are:

USA Digital Radio (IBOC, In Band On Channel), USA DRM (Digital Radio Mondale), almost non-existent DAB, especially Canada, Europa, (Asia)

Mr. Baumgartner explained the situation for DAB in major consumer markets in Europe:

- UK: National programme “Digital One” started in ’99, coverage 65%
- Norway: Coverage in autumn ’99: 50%
- Germany: Regular operation started in 6 federal states, others will follow this year
- France: Major 20 cities covered in ‘99

Afterwards, an apero was organized and donated by Mr. Habersaat from Studer. At this point I would like to thank all the involved people at Studer and for the effort which has lead to the success of the meeting.

After some interesting talks during the apero, Michael Gabriel from Media Services Distribution, SRG SSR idée suisse, Zürich started with the second talk.

In the beginning of 1993 the BAKOM and Telecom started with discussions regarding Digital Audio Broadcasting. Besides the two leading organizations, SRG (today SRG SSR idée suisse) and representatives of the major local broadcasters were joining the DAB

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interest group. This information and discussion circle was initiating the DAB activities in Switzerland. An intensive planning and testing phase followed in the mountainous region of the Canton Bern. The tests were successful and the feasibility of the concept was proven. Since last October SRG SSR idée suisse is operating the DAB network in Switzerland in regular mode. Mr. Gabriel informed us about the state of the project and the DAB-system and gave an overview of the technical implementation in Switzerland. In addition, he reported about the experience gained so far and the next phases of the project. The actual distribution situation is shown below:

It is to say that the speed of the project implementation, measured by the resources is extremely high and the coverage of the areas with the highest population is to large parts already done.

Following this very informative talk from the activity front the view was changed now to the broadcasters. Mr. Pius Paulin who is Technical Manager at Radio Rumatsch in Chur introduced himself to the attendants in the fourth Swiss language. After an overview of the mission of Radio Rumatsch, Mr. Paulin switched to the more commercial topics. It seems that there is practically no marketing activities for DAB in general. The involved parties, including manufacturers of broadcasting (and studio) equipment, broadcasters (government owned and private), signal distributors, manufacturers of receivers (especially mobile, i.e. car radio) and the car manufacturer industry are having a typical chicken and egg problem. Every party can benefit greatly from DAB but nobody is willing to take on the huge marketing expense. If one link in the chain is not sufficiently doing its job, the future of DAB is in question. For the consumer, the biggest problem is the price of receivers and the unwillingness of the car industry to equip cars with pre-installed DAB antennas. After these critical words Mr. Paulin emphasized the importance and potential of DAB for Radio Rumatsch. The specific requirements

for a broadcast automation system led to the last talk of the evening.

With George Wismer who is Project Leader at Studer Professional Audio AG, Regensdorf we listened to a pioneer in the field of Computer Assisted Broadcasting. With his experience in additional services (RDS) of FM programmes, Mr. Wismer demonstrated how the DAB data services can be produced. He gave an indication of where DAB could go in the future through a study of additional technical possibilities. Through his close interest in the progress of the introduction of DAB, Mr. Wismer was able to update the audience on the situation in these countries. Antenne Bayern, the largest private broadcaster in Germany is using the Studer DigiMedia Radio Automation in combination with data insertion equipment developed by the German Institute for Broadcast Technology (IRT). This experience has led into further ideas which are being implemented or under development. Some examples are the distribution of electronic newspapers, news, weather and advertising in textural form with pictures, traffic information (coupled with the traffic guiding system) etc.

Mr. Wismer continued with a live DAB demonstration. In the meeting room the people from SRG SSR idée suisse and Studer had installed a wide range of DAB receivers i.e. a PC with a DAB receiver card where the additional data could be shown very nicely. Furthermore, a stationary receiver with a one-line display was the source for the demonstration of the excellent DAB sound quality. Special thanks to Stefan Widmer who was also able to organize a DAB car radio with a large display. Interesting was the possibility to connect remotely to the automation system of Radio Rumatsch and see the programme changes and instantly the corresponding changes in the audio and additional information. With Pius Paulin's simultaneous translation of the Radio Rumatsch eight o'clock news to German, the meeting ended almost on time. Thanks to everybody for the big effort.

