

**Editorial**

*Dear Readers,*

The worldwide largest TETRA network is currently being created in Germany with over 4.000 base stations and 500.000 simultaneous users.

Projects like this show: PMR is an important topic nowadays and we have made it the special theme of this edition of our SPECTRUM magazine.

You will also find a review on this year's LS Summit. In spite of the worldwide economic crisis the event attracted yet again many visitors from all over the world to our headquarters in Lichtenau.

Building on our success of this year's LS Summit, we would already like to cordially invite you to the LS Summit 2010, which will take place on 23rd of June 2010. The UserGroup will meet right before, on 21st and 22nd of June 2010.

I now hope that you enjoy reading this magazine and wish you all the best for the end of the year 2009!



**Roland Götz**  
Chief Operating  
Officer



**Latest**

## LS telcom and Dataport are planning the new Network for Authorities and Emergency Forces

*The access network of the digital radio for the police in the state Schleswig-Holstein will be planned by LS telcom. In July Dataport selected LS telcom as winner of the European tender process.*

In the coming months LS telcom radio experts will design the complete access network, connecting all the existing TETRA base stations. This will essentially be done through microwave link technology. The planning includes the necessary site surveys and the verification of line of sight between the base stations. At sites where there is no antenna mast yet, the line of sight will be checked with a balloon or by means of a man lift. In addition to microwave technology also Dataport's existing fibre optics network will be

used to guarantee most economic network design.

As the new digital network should not exclusively serve the security forces, one task of the planning experts is to check on possible synergy effects through joint usage of network resources in order to increase reliability and cost efficiency "Reliability and security of the network have first and foremost priority", was made clear by Roland Götz, Chief Operating Officer of LS telcom.

The realisation of such a project is by no means anything new to LS telcom experts. They have indeed planned digital police networks in many other German "Länder" (states) such as in Hamburg, Brandenburg, Saxony and

North Rhine-Westphalia. At the moment they are planning the microwave transmission network for the Security Authorities and Organisations in Baden-Württemberg. "Our strong and convincing references demonstrate our high performance and professionalism," commented the Board of LS telcom visibly pleased.

In the meantime LS telcom has also received the contract for the second project phase, which covers the support of the contracting authority during the procurement process, the participation in award of contract for the system technology and installation as well as the project controlling and documentation during the network realisation. ←

## Planning of TETRA-Infrastructure for Underground „Rheinbahn“ in Düsseldorf

*On the occasion of the switchover from analogue to digital radio, LS telcom is planning the complete new integrated antenna system for the underground part of the Metropolitan's "Rheinbahn". The project will follow the standards and Fee Structure for Architects and Engineers (HOAI).*

First of all, the actual situation and already existing infrastructure will be analysed, preliminary studies will be evaluated and the exact requirements will be defined. After that, a detailed action plan containing several planning phases will be developed in a step-by-step approach in coordination with all the participating authorities and other

professional consultants. The final infrastructure plan and the cost calculation will be used as basis for the procurement process of the "Rheinbahn". LS telcom will also be of support for the bid evaluation and at a later stage for the quality and cost control of the network installation. ←

## Optimisation of BOS-TETRA Network in Berlin

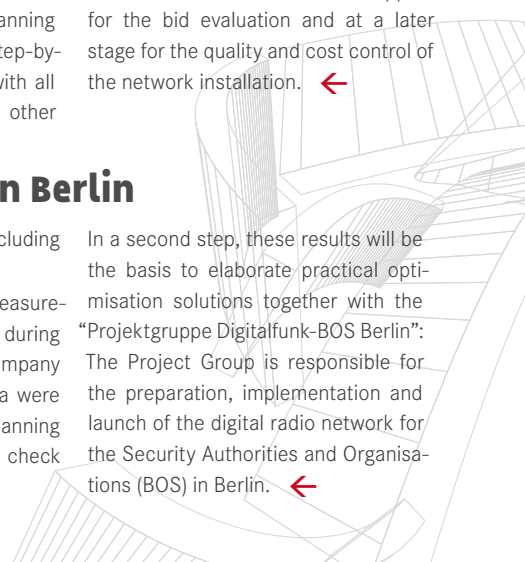
*LS telcom radio experts are currently analysing the reached coverage of the BOS-TETRA network (digital radio of Security Authorities and Organisations), in Berlin.*

The network in Germany's capital city Berlin is currently running in a test phase. During the project different optimisation solutions will also be examined and further proposals for poten-

tial improvement will be made including cost optimisation.

LS telcom experts are using measurement data which were collected during drive tests, carried out by the company GA Netztechnik GmbH. The data were used in LS telcom's TETRA planning tool xG-Planner to simulate and check the achieved network coverage.

In a second step, these results will be the basis to elaborate practical optimisation solutions together with the "Projektgruppe Digitalfunk-BOS Berlin". The Project Group is responsible for the preparation, implementation and launch of the digital radio network for the Security Authorities and Organisations (BOS) in Berlin. ←





## LS telcom becomes Member of PMeV

*The PMeV (Verband Professioneller Mobilfunk e. V.), the German association for professional mobile radio has accepted LS telcom as a full member.*



Through this new membership LS telcom reinforces its commitment and initiatives in the area of PMR. The admission also fits perfectly into LS telcom's industry networking and partnership policy: Through its memberships with renowned industry associations and expert communities.

The PMeV is the German association for professional mobile radio services, and comprises leading providers and users of communications systems for professional mobile applications – including manufacturers, systems and applications houses, operators, and users. Focusing on the optimisation of value-adding processes within user organisations, the PMeV provides a forum for dialogue with market partners, policy makers, authorities, and institutions. The association promotes standards for PMR services and is a proactive contributor to their further development.

The PMeV is also the German partner of the TETRA Association. ←



Foto: Nokia

## LS of South Africa broadens Service-Portfolio

*LS of South Africa has expanded its scope of services and now also offers complete transmitter installations. The first of a number of DVB-H transmitter sites was installed for Multichoice in South Africa.*

This first installation was carried out at an exiting telecommunication site in Pretoria, situated in the Gauteng province. This installation forms part of a SFN network which covers an area of approximately 170 km by 80 km.

The project included the supply and installation of cable trays, design and supply of antenna brackets, electrical installation, installation of the transmitter, program input equipment and the antenna-systems. Apart from the tech-

nical tasks also the logistical challenges of the installation have been succeeded and so the first 900 W DVB-H transmitter in Pretoria and meanwhile further transmitters have been put in operation as scheduled.

In the future LS of South Africa will complete their service portfolio by including radiation measurements to confirm the correct antenna patterns and ERP of the broadcast site. ←



## Digital Radio Coverage in Tunnels of the Local Public Transport

*LS telcom presented white paper at the ATI Symposium(\*) in Bonn.*

During a presentation at the ATI Symposium in Bonn LS telcom informed about the challenges of planning and realising indoor radio coverage in tunnelling for security authorities and organisations (in German: BOS). The paper was read by LS telcom following an invitation of ATI's Chairman, Jürgen Wemmel. The significance and technical challenges of the BOS indoor coverage planning for tunnelling and underground stations were discussed and technical solutions were proposed. Besides the technical part, the presentation also illustrated the organisational difficulties of such a project, as for

example, the coordination between several participating parties in the planning process and during realisation, the ownership structure, respective responsibilities and the assumption of costs. A case study about an accomplished project at the Hamburger Hochbahn, the Underground of the City of Hamburg, delivered the practical experience.

\* = Ausschuss für Telematik und Informationssysteme im Verband Deutscher Verkehrsunternehmen, English: Committee for Telematics and Information Systems at the Association of German Transportation Companies) ←

## Digital Radio in Hamburg's Subway

*Consulting & Planning for the „Hamburger Hochbahn“, the Underground of the city of Hamburg.*

For underground emergency operations, LS telcom plans the indoor tunnel coverage and capacity for the "Hamburger Hochbahn". At the beginning of the project, all participating parties assembled and agreed on the requirements and the constraint conditions. After that a detailed planning concept was set up including a cost budget. In order to realise the project in the most economic way, the consultants also set great store by synergy effects through the use of existing infrastructure. Finally, LS telcom will support the "Hamburger Hochbahn"

with acceptance and type approval procedures, by accompanying the coverage measurements and through the evaluation and documentation of the measurement results. ←



Foto: Hochbahn

## TETRA Network for "Stadtwerke" Baden-Baden

*LS telcom was assigned a contract for the planning of a TETRA network for the Municipal Utilities Company of Baden Baden, the "Stadtwerke".*

The objective was to find the technically and financially best network solution and to define the exact requirements for a tender. The radio planning engineers investigated on the suitability of the proposed antenna sites, calculated the optimal antenna configuration as well as the corresponding costs.

With France and other licence regions

adjacent, it was also necessary to check regulatory coordination obligations and to adjust the configuration of the antenna sites accordingly. The planning results were presented in an extensive report which will support the Stadtwerke Baden Baden to prepare the tender for the acquisition of network equipment and the roll-out. ←

## Visit us at our Booth...

### ABU Digital Broadcasting Symposium 2010, Kuala Lumpur, Malaysia

9th - 11th March 2010  
Hotel Istana - Stand No. 15  
More information at  
[www.abu.org.my](http://www.abu.org.my)

## Training- und Seminar Courses

### Broadcast

#### Broadcast Planning Basic

14. - 15.12.2009

#### Broadcast Planning Advanced

16. - 17.12.2009

#### DVB-T2 – 2nd Generation Digital Video Broadcast

01. - 02.03.2010

### Measurement Techniques

#### Measurements of Human Exposure to RF Electromagnetic Fields

(incl. practical measurements)  
22. - 24.02.2010

### Special Courses in German Language

#### PMR – Professional Mobile Radio

01. - 02.02.2010

#### Radio Network Planning for

#### TETRA Networks

03. - 05.02.2010

A softcopy of the complete Training Calendar can be downloaded from our website  
[www.LStelcom.com](http://www.LStelcom.com)

Alternatively you may contact Ms Sandra Lahm by email on [SLahm@LStelcom.com](mailto:SLahm@LStelcom.com) or on tel: +49 7227 9535 482 for further information on our seminars or for our customised training programmes.

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## LS Summit & UserGroup 2009 Review

*In July, 140 telecommunication, broadcast and spectrum management experts from 24 countries attended this year's LS Summit at the headquarters of LS telcom in Lichtenau. This year again renowned speakers presented interesting topics in the field of spectrum management and radio network planning.*

The future of spectrum management techniques, methods for spectrum auctioning and re-allocation of spectrum as well as the presentation of a frequency information system were only some of the topics covered. In addition DVB-T2, the second generation of digital terrestrial television, was presented and new methods to predict DAB and DVB network quality. Yet another lecture was about predicting fading on microwave links caused by rain and wet snow; to mention but a few of the subjects that were addressed during the day.

As usual the LS Summit was preceded by the LS telcom UserGroup, where software users can exchange their



experience and actively participate and comment on the development of LS telcom software. Dr. Peter Bury, the Chairman of the UserGroup, summarised: "The combination of experts and topics is unique and constitutes an excellent discussion forum." Dr. Bury is Director of Spectrum Policy at OFCOM, the British regulatory authority.

The event days were complemented by an exhibition run in parallel which showcased the latest services and

software solutions for radio network planning and spectrum management and which gave the opportunity for face-to-face meetings.

To balance hard work during the day, a diversified and entertaining evening programme brought a lot of fun: The Bavarian culture evening, for example, included dressing up in real traditional Bavarian costumes.

Technology enthusiasts, on the other hand, were pleased at the second evening during the visit to the Baden-



Airpark museum where ejection seats and any object around flight safety and rescue could be admired. ←

## 2nd Generation Digital Video Broadcast

*The digital terrestrial television system of the second generation achieving 30-50% higher data rates than DVB-T establishes its place in the broadcast world.*

In parallel to the emergence of transmitters and prototype receivers the question about the planning of this new service arises. Various new concepts were introduced starting with multiple Physical Layer Pipes to allow services with different robustness. A wide set of

carrier modes is available that allows e.g. to achieve larger SFN sizes. Rotated constellations and MISO greatly improve the robustness for portable or mobile reception.

LS telcom's DVB-T2 seminar shows the concepts behind DVB-T2 including the basics of OFDM and DVB-T as well as the implications for the planning of this service. ←

## Imprint

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