



Broadcast with LS telcom Software and Services



All around Broadcast with **LS telcom** Software and Services

The broadcast industry is undergoing rapid change. In the past few years the digitisation has brought many new opportunities to the broadcast industry. The increase in spectrum efficiency of digital technologies, such as DVB-T/H, DVB-T2, ISDB-T, ATSC, T-DAB, DAB+, DRM and DRM+, allows for more programmes and services, greater subscriber reach and better quality of service.

But the new opportunities also bring new challenges. Broadcast network planning has become more complex. The planning of digital networks involves more parameters and possibilities to fine-tune the network. Interference analysis is more elaborate, because of more players in the broadcast market as well as other services to be considered in the same frequency band. In addition, the simulcast of analogue and digital networks before the ASO (analogue switch-off) demands real expertise, experience and tenacity of the broadcast planner.

Even more so important in this fast-paced environment is to set up the right business model to stay competitive in the long-run.

Do you agree that you need an experienced and reliable partner to keep up with the fast changing technology, standards and regulations in broadcast?





LS telcom, a Pioneer providing Broadcast Solutions

We provide you with everything you need in broadcast. Our portfolio includes software, consulting, engineering and measurement services for the design, planning and optimisation of broadcast networks. Training on technologies, standards, and regulations as well as transmission container commissioning complete our area of expertise. We even offer antenna measurements via a remote controlled miniature helicopter – an unprecedented service for cost-effective and accurate measurements.

We are in the broadcast market since the early 1990s and rank among the pioneers in FM and TV broadcast network planning. Our network planning software for T-DAB, DAB+, DVB-T & T2, DVB-H, ISDB-T and DRM(+) was the first of its kind on the market for these technologies.

You are looking for someone who is ahead of the current technology state?

We are a sector member of the ITU (International Tele-communication Union), and affiliate member of

the ABU (Asia-Pacific Broadcasting Union) and participate regularly in national and international broadcast working groups.

Get support from our multidisciplinary team of experienced engineers, software developers, technology experts, network planners, strategic consultants, project managers and professional trainers to tackle any issue in broadcast you may have.

The number of our customers speaks for itself.

- Public and private broadcast network operators,
- regulatory and media authorities,
- transmitter and antenna manufacturers, and
- content providers,

in over 90 countries across all continents rely on our expertise.

We serve our customers from our headquarters in Germany, our subsidiaries in France, Canada, United States and South Africa as well as our representative offices in China, Hungary and Oman.

CHIRplus_BC for the Design, Planning and Optimisation of Broadcast Networks

Digital broadcast technologies provide many advantages over analogue technologies, but bring along greater complexity in the planning process. You need robust software which takes into consideration the distinct planning parameters of the digital technology you want to plan your network with.

Twenty years of software development and experience in the broadcast market make up the foundation of CHIRplus_BC. This is why ALL analogue and digital broadcast technologies, including the most recent ones such as DVB-T2 (Lite), DRM+ and ISDB-T and ATSC can be designed, planned and optimised with CHIRplus_BC. This includes complete nationwide single frequency networks (SFN).

Aimed specifically at the broadcast planner, the user interface and the application of macro functions allow them to quickly leverage the capabilities of CHIRplus_BC. With the help of macros the user can automate repetitive planning and calculation processes. In addition, broadcast planners appreciate in particular the ruggedised calculation engine set out to support time-critical field strength and fast network wide calculations. The software includes all interference calculations the broadcast planner needs, also considering other services operating in the same frequency band and aeronautical compatibility (LEGBAC).

CHIRplus_BC is a highly modular planning and coordination software. It consists of the different technology specific modules in addition to the Coordination and Core Module. The latter includes the powerful database, the Graphical User Interface (GUI), the Geographic Information System (GIS) and an interface for data import and export to other LS telcom and third party tools.



Whether you are a regulatory authority coordinating broadcasting and other services region- or country-wide, or whether you are an operator planning your network; CHIRplus_BC covers the end-to-end engineering process of frequency planning and coordination, network planning and optimisation.

The intuitive user interface and the implemented macros, which enable the launch per one-mouse-click of automated repetitive processes allow for a smooth workflow.

For efficient work on the same planning project, planners can create, share and save working databases per project and/or work with the common central database. Access and sharing of data across a multi-disciplinary project team is made possible through the modular licence structure.

Frequency Planning & Coordination

Having correct and up-to-date data available for accurate coordination and interference analysis goes without saying. CHIRplus_BC follows the coordination process according to ITU Recommendations and supports all international Frequency Plans. Access to, data query of and import from BR IFIC, IDWM (ITU Digitised World Map) is very easy and convenient for the user. Electronic notification files can be generated using the ITU TerRaSys format.

Digital Terrestrial Television (DTT)

CHIRplus_BC fully supports DVB-T2 planning. It takes into consideration the higher complexity of DVB-T2 which comes with more parameters than the conventional DVB-T. It offers enhanced configuration possibilities and pre-sets for the various T2-constellations and reception modes. As not all combinations of pilot pattern, constellation and guard interval, etc, are possible according to the DVB-T2 specification, the user is only able to select valid combinations in CHIRplus_BC. You can also plan DVB-T2 'Lite' by selecting the 'T2-lite profile' with the appropriate modes and T2-lite additional code rates.

Of course, CHIRplus_BC also includes the specific planning parameters and processes for ISDB-T and ATSC.

Network Planning

You can plan any network you want – from single transmitters to multiple networks with local,

regional or nationwide channels. The integrated multithreading network processor calculates several results simultaneously and supports you in the nationwide calculations. To automate repetitive steps in the planning processes you can apply macro functions. Complex network planning batch jobs are then started with one mouse-click.

Network Optimisation

For network optimisation purposes you can easily import measurement data into CHIRplus_BC to compare the real network data with the data in your database and to calibrate your propagation models for more accurate planning.

Single Frequency Networks (SFN)

In digital single frequency networks (SFN) there may be self-interference due to large time-of-arrival difference between the OFDM signals from different transmitters. Based on arbitrary test points defined by the network planner, CHIRplus_BC offers an automated delay optimisation function to eliminate the self-interference in the area of interest.

Automatic Channel Assignment

For advanced frequency planning CHIRplus_BC offers an automatic channel assignment procedure which takes into account the real coverage of the network stations. You can either re-assign all channels or chose to search new channels for certain transmitters of the network only.

With CHIRplus_BC you can pinpoint exactly the network solution which corresponds best to your planning objectives in terms of spectrum efficiency and coverage quality as well as network investments and operational expenditure. Broadcast networks of all technologies in over 90 countries worldwide have been designed, planned, coordinated and optimised with CHIRplus_BC over the last twenty years.

Maintenance & Customer Support

Excellence in what we do and our customers' utter satisfaction is our priority. We want our customers' satisfaction to last and our clients to be our long-lasting partners. This is why we offer an extensive and versatile Software Maintenance & Customer Support Programme.

You are probably interested in the continuous quality of your software; help desk support or software updates. We offer that and much more. You can also exchange your experience with your counterparts and have a say in our software development in participating in our annual UserGroup Meeting.

Software & Tool Training

Your software is successfully installed. Now you wonder where and how to start? Or you need a brush up of your software skills?

We give extensive software tool training and show you how to use your software to its full extend. Feel comfortable with the everyday use of your software and learn the little extra bit to optimise its use. You can choose from a list of different course levels: beginner, intermediate and advanced.

Strategic Consulting and Engineering Services

A broadcast network that is optimised in terms of technology, quality of service, capital expenditure, and long-term cost efficiency, **needs to be well-planned**.

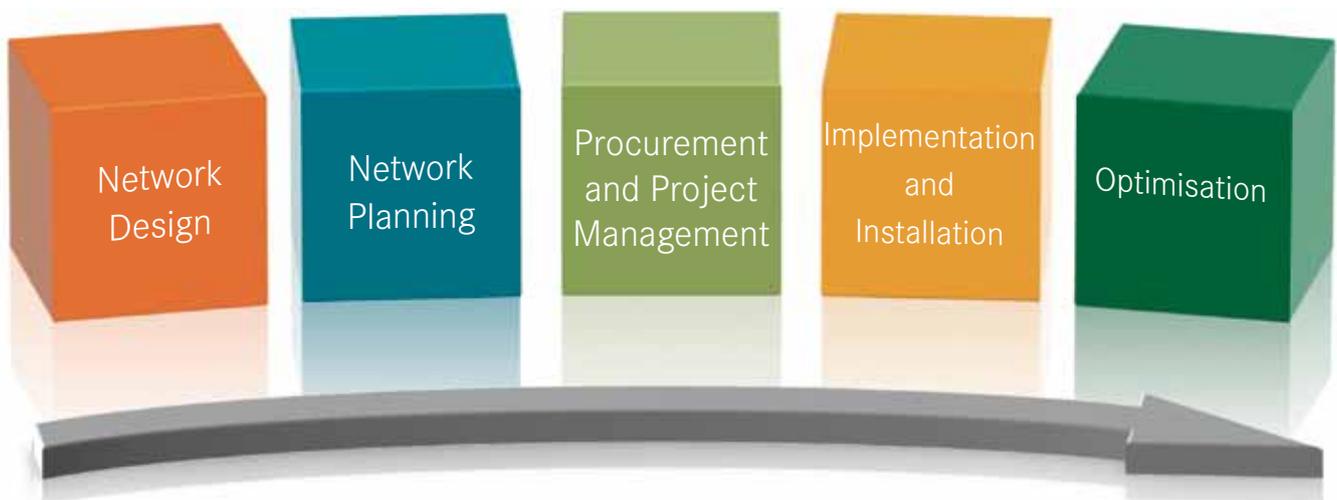
Many planning parameters, such as your initial situation, budget, technology costs, network coverage, quality of service, start of network operations, and many more, have to be taken into consideration. The importance of each parameter has to be well weighted.

At LS telcom, we cover the entire Broadcast Network Life Cycle from Design and Planning through Procurement, to Implementation and Optimisation.

You need advice on which network technology to use?

Whether you want assistance in network migration, experts to design your network in detail, or constructors to implement your network – any issue in broadcast you can think of – cooperate with us. We are your reference when it comes to broadcast networks. Our experienced and multidisciplinary team provides a wide range of knowledge of **ALL broadcast technologies** and the various skills required for the successful planning, implementation and optimisation of broadcast networks.

Consulting & Engineering covering the complete Life Cycle of a Broadcast Network





Network Design

Which network technology is the best for my given case? How many programmes do I want to make available? And what kind of data rate? Do I want to offer fixed, portable or mobile reception to my customers? Free-to-air or Pay TV?

During the design phase many different parameters have to be determined and various types of questions - business related and technical - have to be answered before you can go into detailed planning of your broadcast network.

Whatever your questions, we help you find the answers - we assist in feasibility studies, technical and financial audits, migration concepts, business case set up or evaluation, cost assignment and estimations.

Whether you want to offer portable, mobile or fixed reception, region- or nationwide; we provide you with **the network design best adapted to what you want to achieve**. This may be cost-effective reception covering two-thirds of the population or nationwide coverage requested by public broadcasters.

Our various network design scenarios and their trade-off in terms of technical requirements, technology, financial viability, time and effort allow you to **make research-based decisions which result in optimal network design**.

Network Planning

Professional planning is the foundation of any robust and cost-effective broadcast network delivering high quality of service. We cover the end-to-end broadcast network planning process from spectrum strategy planning and coordination, to initial and detailed coverage planning.

Our network engineers plan your regional and national **single frequency and multi-frequency networks** and are always up-to-date with the latest standards and regulations, such as ITU, CEPT and ETSI, etc.

You want to migrate from analogue to digital technology?

We plan the different network phases for you. This starts with the simulcast, when analogue and digital networks co-exist, while the digital network is gradually being built and its coverage extended in several network phases. It is finalised with the analogue switch-off (ASO) and when the final digital coverage objective is reached.

We set up the optimal migration plan in terms of coverage, network quality, cost and time constraints. In order to guarantee an **interference free network during all phases**, our network engineers carry out interference analyses with respect to the existing analogue services, digital TV and with respect to non-broadcasting services.

Our detailed coverage planning includes different planning and optimisation scenarios. Our network engineers analyse, for example, the impact of increased or reduced transmit and radiated power or a change in antenna height and tilt. Or we calculate the network with a different system to pinpoint the network that suits your objectives best.

Our planning results in the real network to be rolled out. The final documentation includes everything from equipment lists detailing the number of transmitters and antennas and equipment types as well as detailed site survey, antenna patterns, coverage plots, population analysis and the Roll-Out Plan, etc.





Procurement and Project Management

Once the network is successfully planned and validated, the procurement of the network is then the next important step to guarantee the timely implementation and start of operations of the network. If you want to avoid problems and delays in your procurement, costs getting out of control and project deadlines postponed, rely on the people doing this every day.

Our experienced project management and procurement team assists you in the preparation and evaluation of your procurement documents, such as tenders and RFPs (Request for Proposal) and checks the technical, economic and legal feasibility of your project.

We are independent and neutral towards any network infrastructure vendor. This enables us to offer a mix of network equipment which is most adapted to your particular requirements.

In addition, with our 20 years of international experience and market knowledge in the procurement of broadcast networks, you are on the safe side.

Implementation and Installation

Many different stakeholders and subcontractors are involved during system implementation. Project management and close supervision of the implementation process are vital to anticipate and overcome problems, control costs and eliminate potential risks.

We cover the complete implementation process, including installation, commissioning, acceptance testing and measurements.

You want to be up on the network implementation?

We allow for genuine transparency throughout the process through detailed performance reporting and other extensive documentation.



Broadcast transmission container installations

The installation of new sites always involves a great amount of costs and can be time-consuming. The same is true when a site has to be upgraded, but there is no more space for additional equipment.

We can provide you with high power digital broadcast transmitter turnkey installations. Our service ranges from container installation to testing and build-up through to commissioning to the point where the containers are ready to operate. After a final commissioning on-site the container only needs to be connected to the transmission network and external power supply. With our routine installation team you can reduce work on-site to a minimum and therefore reduce overall installation costs.

Cost-Effective Measurements for Commissioning and Acceptance Testing

Does the real network really correspond to the network that you planned?

As close as you can get with planning; twenty percent of existing interferences are due to antenna location and set up and cannot be simulated. Give your network the last tweak to **guarantee supreme network quality**. Measure the real antenna pattern and compare it to the planned pattern for adjustment before the final commissioning and acceptance tests.

This is possible with our unprecedented miniature helicopter measurement service. Instead of using a manned helicopter with 20 to 30kg measurement equipment, a not very economical way to measure antenna fields, we use a remote controlled mini-helicopter. This includes a payload, the LSXSensor, our light-weight radio-frequency sensor with analysis capabilities. The helicopter together with the payload weighs a total of five kilos only. It flies up and around the antenna to measure the antenna output at several points, for the calculation of the 3D antenna pattern. The helicopter is GPS programmed and is extremely easy to fly.

We take the measurements, compare the real antenna pattern with the planned one, and provide the adjustments to the antenna pattern if necessary to **guarantee that the REAL network corresponds exactly to the planned network.**



Optimisation

A broadcast network in operation needs to be optimised and maintained to guarantee continuous quality of service and careful use of network resources over time.

We optimise your existing network with regards to quality of service, coverage, technology cost, operational expenditure, or any other parameter that you would like us to check.

Measurements

Whatever measurement you need; continuous wave (CW), radio coverage or human exposure measurements, electromagnetic emissions compliance reporting or spectrum monitoring; our service portfolio covers them all.

Our service includes the provision of all kinds of measurement devices, including vehicles and miniature helicopter. We compare your stored network data with real network conditions for trouble shooting and network optimisation.



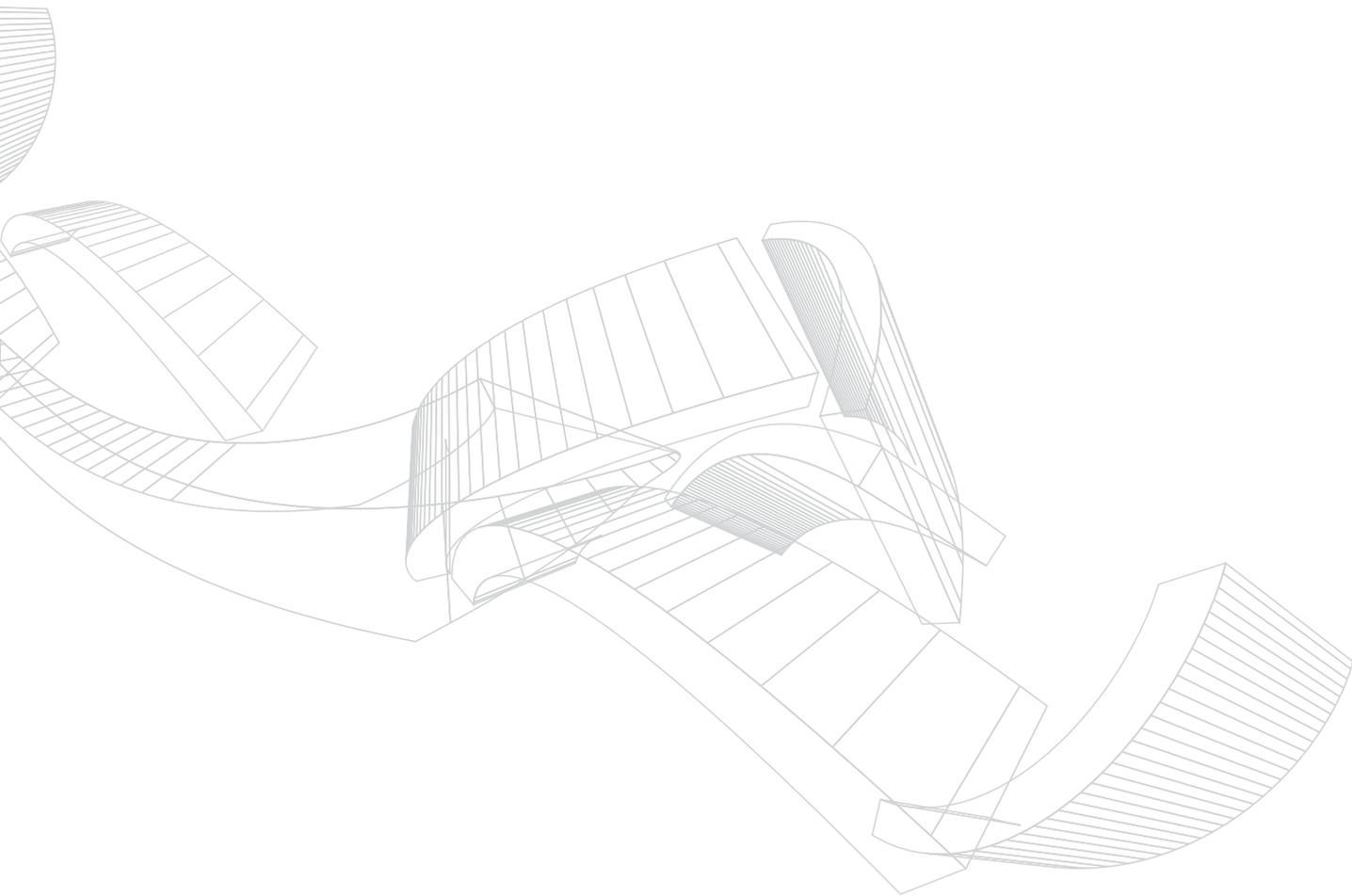
Photo: Narda Safety Test Solutions

Training & Competence Centre

Technology, standards and regulation change quickly in the broadcast industry.

Keep yourself up-to-date with our training and choose from a wide variety of training courses, seminars and best practice education offered by our Training & Competence Centre.

For more than a decade we have brought professionals of all levels up to speed with our courses on broadcast planning, technology, industry standards, regulations and many more.



We have customers in over 90 countries worldwide:

- Radio Regulatory Authorities
- Ministries
- Network Operators
- System & Infrastructure Service Suppliers
- System Integrators
- Media Companies
- International Institutions



For further information, please visit our website www.LStelcom.com or check our training calendar and product catalogue.

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