

CHIRplus_NGN

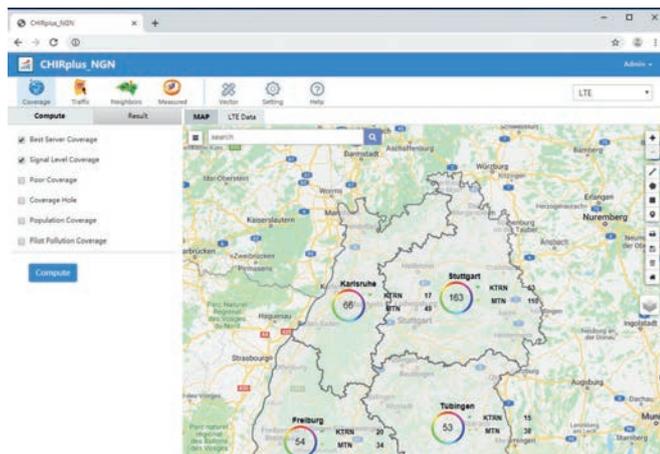
Web-based mobile broadband network planning

CHIRplus_NGN is a highly modern and flexible software system supporting 2G to 5G outdoor as well as indoor network coverage planning and interference analysis. In addition, other services including WiFi and narrowband technologies (such as LoRa or NB-IoT) may be considered as well. The software, which combines powerful engineering capabilities with extraordinary network visualization functionality, helps operators cope with increasing traffic

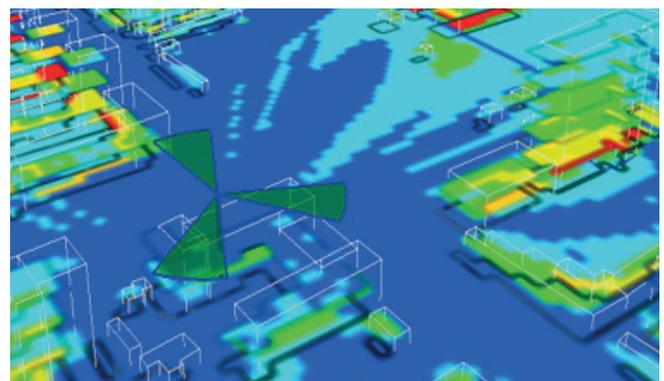
volumes, higher network density and service diversity coming along with 4G and 5G.

CHIRplus_NGN is a browser-server based planning tool which works on all current web browsers. Users can connect to the tool from wherever they are. Calculation results are displayed quickly on web based maps and are easily shared among multiple users. By this means, CHIRplus_NGN combines great efficiency with high usability.

Network operators use the software for network wide calculations as well as detailed local site analysis.



Network Overview

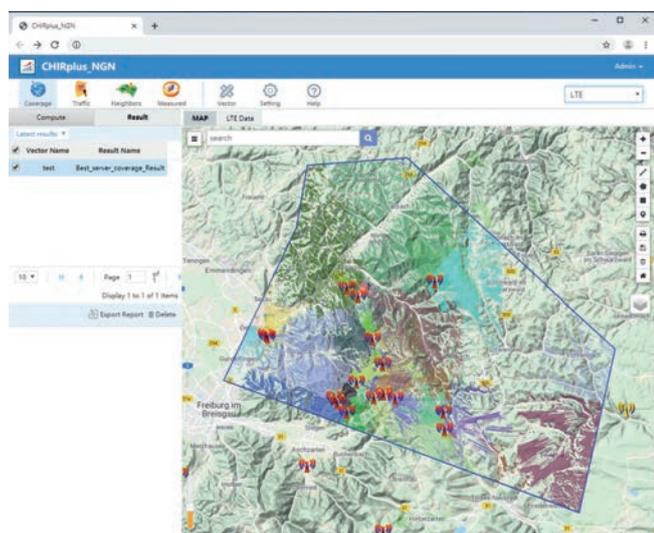


Combined Indoor/Outdoor Analysis

Approximately 70% of LTE data services are used indoors. This is why CHIRplus_NGN features simulation for outdoor, indoor as well as combined indoor and outdoor calculations. As the user interface unites the planning functionality for all technologies and services, it provides high usability and convenience to the planner. Extensive 3D visualization lets the planner verify the coverage results for each floor level of a building. The user can adapt building transparency settings and zoom, as well as rotate the viewing angle. This way, no spot in the network remains uncovered.

Regulating authorities can benefit from CHIRplus_NGN as well. With the aid of standardized interfaces and data exchange formats, network operators may submit the data about their network. After importing the data, regulating authorities may easily assess the performance and coverage of the respective stations and networks. By this means, it is for example possible to check whether the network operators fulfil the defined targets for coverage.

For a detailed analysis, planning engineers can analyze individual cells of a single base station. They can add and remove stations to analyze the impact in terms of interference and coverage. However, a strong signal level is not the only figure that needs to be considered with regards to the quality of a network. In order to guarantee the required quality of service, the traffic needs to be considered as well. CHIRplus_NGN provides an area calculation that highlights the areas with high traffic volumes. The user can select different traffic types (e.g. video telephony, online gaming, video streaming) in order to predict the

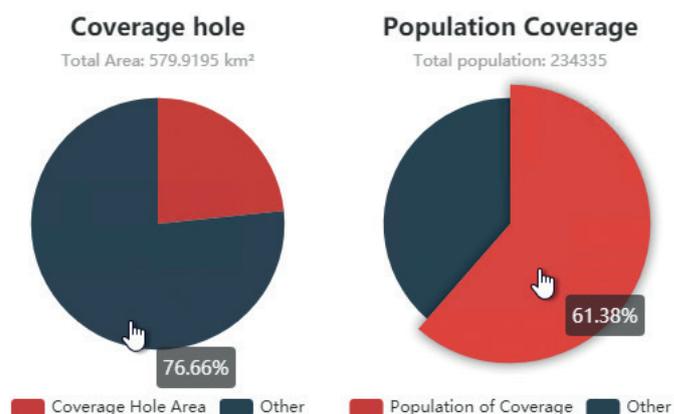


Best Server Analysis

required bandwidth for uplink and downlink. Based on this information, the user is able to optimize the performance of the network in hotspots for example by installing small cells. The results may be displayed both in a graphical manner and with the aid of pie and bar charts.

On a network wide level, the user is able to analyze the number of overlapping cells and maximum service cells. Based on this information and with the aid of a dedicated neighbor planning function, the user is able to optimize the performance of the respective network. Besides simulation data the software supports the import of mobile radio and drive test data to obtain a real-time picture of the coverage situation.

Finally, the planning engineer may assess the population coverage. Based on configurable thresholds, CHIRplus_NGN determines both the amount of people and the area that are covered within a specified vector. The corresponding results are displayed either graphically on the geographical information system or with the aid of comprehensive and detailed reports.



In summary CHIRplus_NGN provides the following functions:

- Site and network analysis to evaluate coverage
- Automatically locate network problems based on live measurement
- Combined indoor/outdoor planning
- Network capacity analysis
- Neighbor planning & optimization
- Frequency planning & optimization
- Dedicated indoor modelling
- 5G interference analysis
- 5G station planning for 700 MHz and 4.9 GHz band

For further information, please visit our website www.LStelcom.com or contact Info@LStelcom.com.