SPECTRUM 2019

News Magazine - Spectrum Policy and Regulation

LS telcom
Smart Spectrum Solutions

// The new era of spectrum management: From customization to configuration

Efficiency is of the essence: use mySPECTRA

The highly innovative enterprise IT system mySPECTRA introduces a new era of efficiency and user experience in spectrum management. The system consists of three fully web-based and cloud-ready modules for administrative spectrum management:

mySPECTRAportal

License applicants use mySPECTRAportal for license application, license, complaint and account management. The most advanced version of mySPECTRAportal provides full e-licensing.

mySPECTRAoffice

Regulatory staff manages the complete license lifecycle with mySPECTRAoffice from receiving applications, interference & co-existence analysis, frequency assignment, and international coordination, to issuing licenses, all the way to keeping check on the receipt of payment.

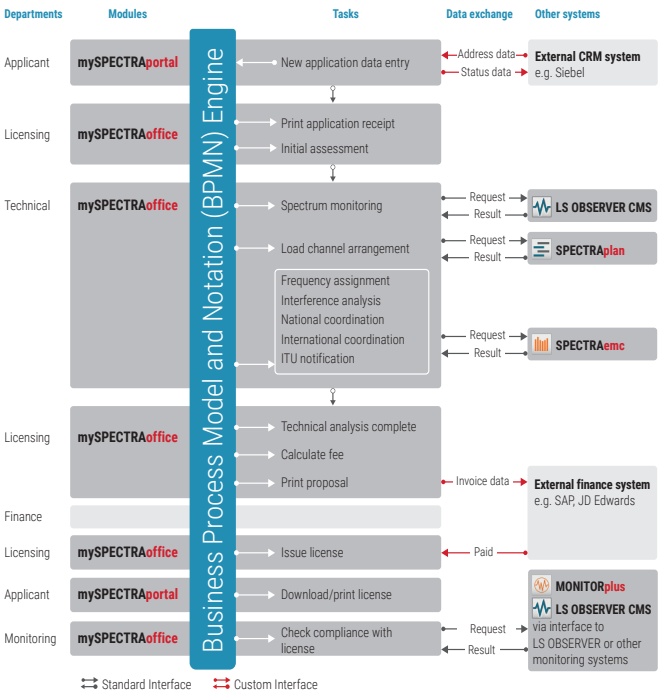
mySPECTRAinfo

Regulators wishing to provide information on frequency plans, site locations and regulations to the public implement mySPECTRAinfo, which presents all the information in a clear and structured manner.

The browser-based mySPECTRA modules are completed by the central data repository and three technical modules for in-depth frequency planning, engineering and monitoring analysis.

Why use mySPECTRA?

mySPECTRA addresses two fundamental requirements of regulators today: Regulators need a spectrum management system which handles a myriad of license applications and licenses and which is scalable to accommodate even more licenses in the future. This is only possible with a highly automated workflow-based system. Secondly, in a fast-changing world, regulators require the flexibility to quickly put into operation new, and adapt existing license types and schemes. mySPECTRA provides them with the necessary configurability to do this.



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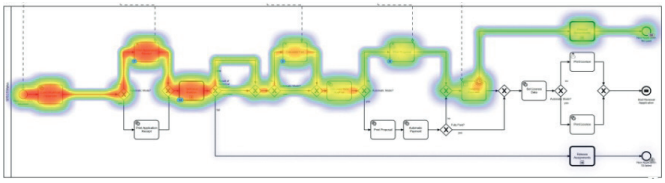
Fully automated workflows and KPIs to permanently optimize processes

mySPECTRA is based on BPMN 2.0 Process Engine, the latest ISO standard to track workflows, to extract key performance indicators (KPIs) and to identify bottlenecks in order to adapt and improve processes. Workflows automate and streamline the handling of the numerous licensing products in a regulator's general service-catalog. Many different licenses of all types of radio services follow their way through the web-based system automatically and solicit action from the user only when necessary. All system users are guided through complex processes to ensure consistency and compliance with national regulatory laws.



Visualization of workflows: „heatmaps" show bottlenecks in operational processes

From customization to configuration

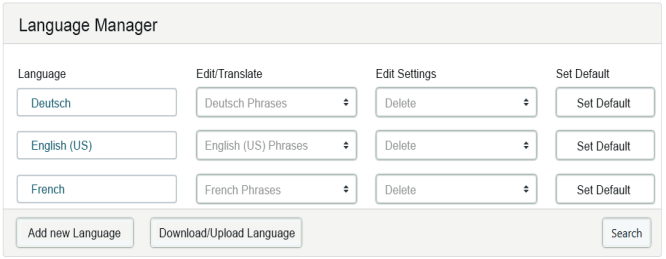
The new underlying philosophy of mySPECTRA is its configurability. Regulators can configure mySPECTRA to adapt it to national and regional regulations, national licensing schemes and fee decrees. Data fields and data entry forms can be added, amended or deleted according to regulators' needs.

Configurable workflows

The introduction of new radio services and products or the modification of existing ones is now much easier than before: Users can easily configure all types of workflows. They can create new workflows or duplicate them to create different versions using the standard language BPMN. The configurator can delete steps in a workflow, add standardized blocks or configure time settings and validation rules. New license types or different versions of a certain license can be put into operation in next to no time.

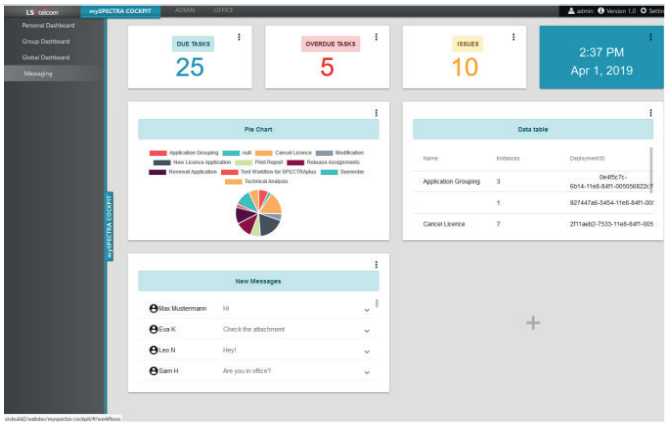
Localization in mySPECTRA

The language manager in mySPECTRA enables regulatory staff to create new language versions and edit terms and phrases in all languages. New language versions can be created through on-screen translation or by downloading and uploading a language file for translation at an external translation agency.



The dashboard

The dashboard gives a clearly structured overview of open, draft and submitted applications, active and expired licenses, open invoices and complaints; for the user to prioritize certain actions over others. Key performance indicators (KPIs) such as average processing times, application queues, and bottlenecks are displayed to increase overall performance.



Comfortable and time-saving data entry

Data entry for applications is made as simple and as least tedious as possible for the user. User-friendly data entry masks with automatic pre-selection of validated equipment as well as drop-down menus avoid time loss and errors and guarantee consistency of the data entered. The user only has to enter application-specific information. ■

// LS telcom supports regulators preparing for 5G

Germany's BNetzA first in Europe to provide local 5G frequencies for vertical markets

SPECTRA spectrum management adapted to support local frequency assignments for vertical markets

Germany's frequency regulatory authority, the Bundesnetzagentur (BNetzA), is the first to allocate the frequency range 3.7 to 3.8 GHz on a first-come-first-served basis to the so-called vertical markets, comprising industries, such as manufacturing, processing, utilities, healthcare and transport. These frequencies can be used for industrial automation or industry 4.0, but also for agriculture and forestry. The aim is that these areas can also benefit from innovative 5G applications. The frequencies allocated to industry will help to build local 5G networks according to the precise needs of the companies. "…This is an essential contribution on the way to industry 4.0", explains Jochen Homann, President of the Federal Network Agency.*

Companies can build local networks for their own private use. The right to apply for the 3.7 to 3.8 GHz frequency range may arise from ownership of the property or from any other right of use such as rent, lease or commissioning.

SPECTRA supports the assignment of local frequencies

In order to cope with the huge number of license and coordination requests expected from a multitude of industrial applicants in this band and to support the calculation and assignment of local frequencies, the BNetzA commissioned LS telcom to make adjustments to their spectrum management system SPECTRA. BNetzA's SPECTRA system now fully supports all

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processes for the allocation of 3,7 to 3,8 GHz frequencies to industry.

The new assignments for local frequency use will include both geographical information on the requested service area of the local network to be licensed, as well as technical information on the stations within the area. Assignment will be flexible; frequencies are assigned in blocks of 10 MHz bandwidth and a maximum power level on borders of the service area.

The system user can easily check the compatibility of 5G stations within the requested area and versus licensed stations from other services sharing the same and/or adjacent frequency bands. In case of incompatibility, 5G areas and stations can be modified. The user can check the coverage for a single station as well as the universal coverage for a requested service area. Within an assigned service area, any desired power level can be applied, as long as the power level on the border of the service area corresponds to the defined one. The assignment procedure also includes interference analysis against satellite earth stations.

SPECTRA features an electronic batch import for local network service areas and stations and, based on the efficient BPMN workflow management and SPECTRAemc wizards, can assign frequencies to service areas in parallel mode. This guarantees the assignment speed needed to serve the expected number of local frequency applications. ■

**press release Bundesnetzagentur, 11 March 2019*

// USA

Delivery of C-Band/5G Spectrum Compatibility Study to Intelsat and SES

LS telcom delivered a comprehensive study of 5G spectrum compatibility to Intelsat and SES, leading providers of C-Band satellite services in the United States. The objective of this spectrum study was to analyze the characteristics and impact of signal interference as well as potential mitigation measures as a result of introducing 5G deployments in adjacent spectrum to existing C-Band satellite services.

As the FCC continues its comprehensive analysis of optimal spectrum for 5G, the use of a portion of 3.7 GHz to 4.2 GHz (commonly referred to as C-Band) has become a likely candidate. To better understand the potential impacts to existing C-Band satellite systems and users, the study analyzed the interaction between a hypothetical 5G network with the existing operational characteristics of the C-Band satellite in the 3.7 GHz to 4.2 GHz spectrum. The study provided by LS telcom covered multiple network components and a variety of operational scenarios to analyze and predict the potential impacts of 5G operations and the subsequent adjustments and mitigation techniques required for existing satellite and ground station equipment.

"We are excited to be part of this dynamic time in spectrum management. As the push to 5G continues, the need to understand the impacts of adjacent systems and spectrum sharing are critical to the success of the next generation of wireless technology, as well as for the incumbent systems that are now being asked to share their spectrum resources," stated Casey Joseph, Vice President at LS telcom Inc. "With our comprehensive solutions and global experience in spectrum management, LS telcom is uniquely positioned to help both new entrants as well as incumbent systems in this transition."

The delivery included a report of findings based on several modelled locations as well as a software toolset enabling ongoing analysis of additional site locations and scenarios. The baseline of the solution leveraged LS telcom's SpectrumMap, a visualization platform able to interpolate data from multiple sensor and source inputs to provide coverage predictions. ■

// Burkina Faso

Burkina Faso takes it all: from strategic consulting to spectrum management and radio monitoring systems

Following the delivery in 2018 of LS telcom's automated spectrum management system SPECTRA to support end-to-end administrative and technical spectrum management processes in Burkina Faso, the national regulatory authority ARCEP is now acquiring a radio monitoring system consisting of two mobile units. ARCEP will use the two mobile radio-monitoring units to control the complete national frequency range. The units will also support the control of the television spectrum during the migration from analogue to digital TV in Burkina Faso.

A delegation from ARCEP came to Paris and Lichtenau in May/June for an extensive training course on general radio monitoring and DVB-T2 technology as well as for the factory acceptance test (FAT) of the two mobile control units. The next step is the delivery of the vehicles to the ARCEP headquarters in Ouagadougou.

The spectrum monitoring system will be seamlessly integrated with the spectrum management system, which was deployed and commissioned in 2018. Last year, LS telcom also carried out comprehensive consulting work on the elaboration of a procedures' and regulatory manual as well as the updating of the national frequency plan of Burkina Faso. Both have now been implemented in ARCEP's automated spectrum management system SEGAS, based on SPECTRA. ■

The delegation from ARCEP with the trainer Thierry Guillemin, and Laurent Novel, the new sales coordinator for spectrum monitoring projects at LS telcom

// Congo Brazzaville

Spectrum management and radio monitoring systems for ARPCE

Following two successive call for tenders, ARPCE, the regulatory authority of Congo Brazzaville, chose LS telcom in 2018 for the supply of two systems: an automated spectrum management system and an integrated spectrum monitoring system. The turnkey project for the deployment of the spectrum management system includes equipment, software, training, and support. The SPECTRA system is composed of task-specific software modules for administrative and technical spectrum management. The integrated processes are automated via the BPMN Engine (Business Process Model and Notation). LS telcom uses BPMN 2.0, the latest ISO standard to track workflows and extract performance indicators to improve processes. The spectrum monitoring system is also deployed in a turnkey project and includes a control center, a monitoring vehicle and a transportable control unit. The integration of the two systems facilitates the correlation between frequency authorizations and measurements made by the radio monitoring system. This will optimize spectrum use and better combat the misuse and illegal use of frequencies. ■

// Ireland

LS telcom conducts Study on Terrestrial BB-PPDR Spectrum Options

LS telcom conducted a study for the Commission for Communications Regulation (ComReg) in Ireland on network deployment and spectrum options for Terrestrial Broadband Public Protection and Disaster Relief (BB-PPDR). ComReg published the final report of the study on 18th June, 2019.

The research carried out by LS telcom was an input to ComReg's proposed multi-band spectrum award consultation. The scope of the study was to determine how existing and proposed network deployment options i.e. using dedicated networks, commercial networks or a hybrid, and proposed spectrum options, could potentially impact the availability of future spectrum, particularly the 700 MHz duplex.

LS telcom performed analysis of the various network deployment and spectrum options, which included an extensive pan-European country feasibility analysis of the different technical alternatives to inform the findings.
The spectrum requirements calculation for BB-PPDR usage in Ireland found that 2 x 6 MHz is sufficient to meet all possible PPDR scenarios (in accordance with the LEWP-ETSI Matrix) and that there is no impact to ComReg to include the full 2 x 30 MHz in 700 MHz duplex in the multi-band award.

The final report published by ComReg feeds into ComReg's public consultation for the multi-band spectrum award process which includes a section on BB-PPDR spectrum options to inform stakeholders of the outcome of LS telcom's analysis. ■

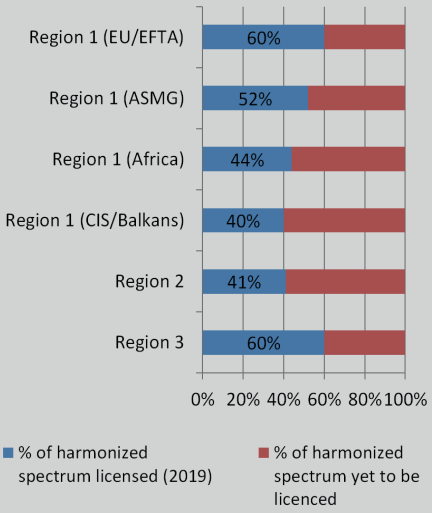
Find the report here:
https://www.comreg.ie/publication/ls-telcom-report-study-on-terrestrial-bb-ppdr-spectrum-options/

// Spot on

Do we need more IMT spectrum to address the growing demand for data services?

LS telcom's report "Analysis of the World-Wide Licensing and Usage of IMT Spectrum" (2014, revised in 2019) checks the facts and figures on world-wide identified, harmonized and actually licensed IMT (International Mobile Telecommunications) spectrum. The report shows that much of the harmonized spectrum still needs to be licensed in many countries, namely on average between 40 – 60%.

The report provides average figures for all IMT identified spectrum bands, FDD and TDD, in all ITU Regions and can be found here:
https://www.lstelcom.com/imt ■



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