Heiko Ross I ISMC-24 I 8th November 2024 - New Delhi

Tools for Spectrum Planning and Coordination

LS telcom – Smart Spectrum Solutions

- Founded in 1992 in Germany
- Provider of system solutions and consulting services addressing the efficient and effective use of the radio spectrum
- Customers in more than 100 countries
- Today, close to 300 employees at the headquarter and 12 international subsidiaries
- LS Spectrum Solution in Mumbai/India since 2020

LS telcom
Smart Spectrum Solutions

Why has spectrum planning and coordination become so important?

1975

2020

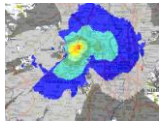
Why has spectrum planning and coordination become so important?

- Radio spectrum is a scare resource – demand is greater than available supply
- Demand originates from different market segments
  - Commercial radio network operators, critical communications, defense, etc.
- Radio spectrum is a key enabler of today's and future society
- Economy value of radio spectrum is increasing

Therefore…

- Spectrum planning and coordination tools
  - are essential for efficient spectrum management and
  - ensure optimal use of the finite radio frequency spectrum while minimizing interference

Historical evolution until today



1990

Application of planning tools

Automation of business processes

2010

2025

Application of Artificial Intelligence

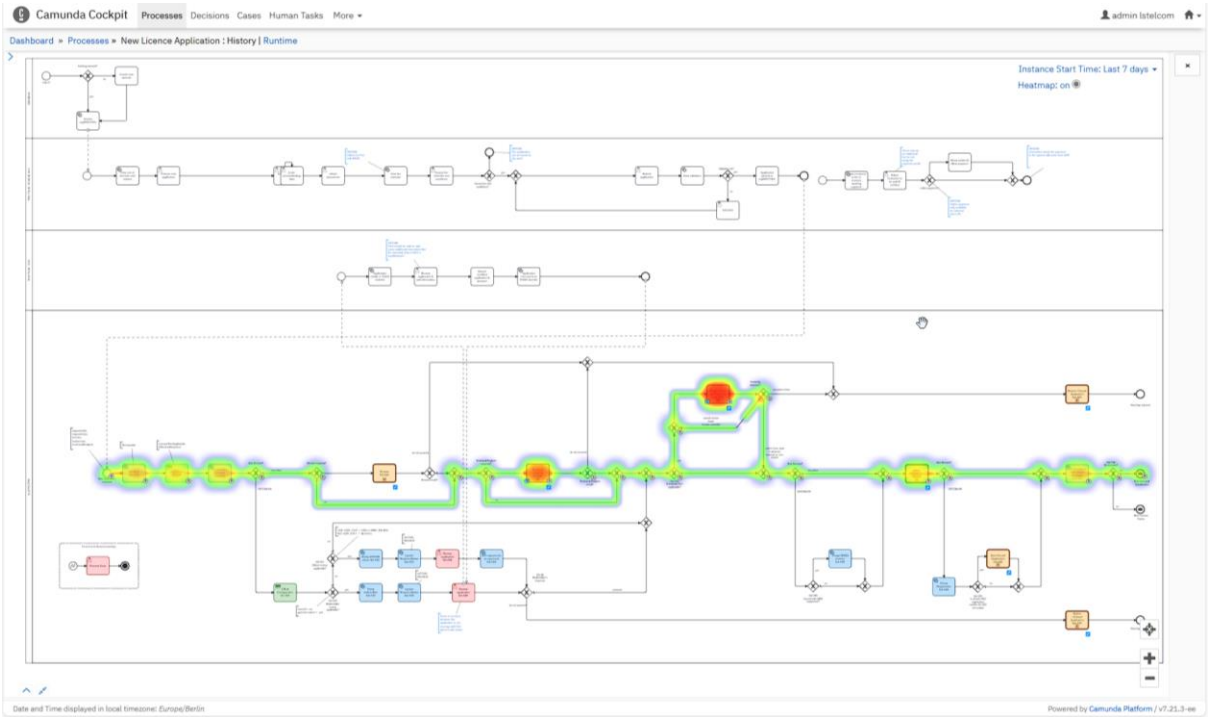
2000

Integration of Business processes

Support of E-government strategies

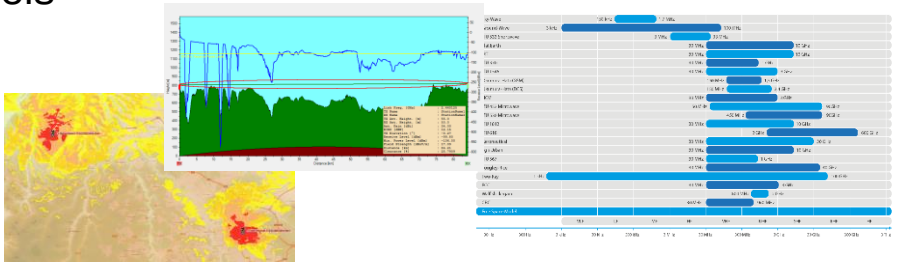
2020

Exemplary, holistic spectrum management process



Today’s mandatory requirements

- Application of professional spectrum planning and coordination tools
  - Adherence to international regulations, standards and agreements
  - Consideration of National Frequency Allocation Tables
  - Ability to address all relevant radio services
  - Availability of advanced propagation models
  - Support of various technical analysis



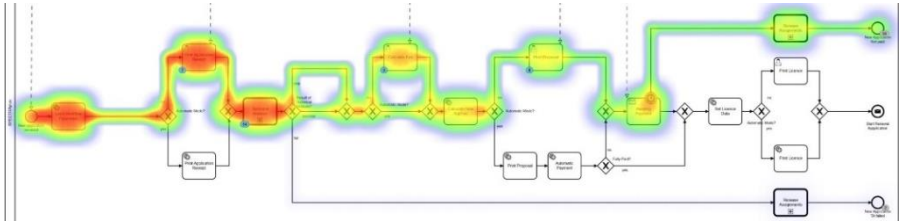
Today’s mandatory requirements

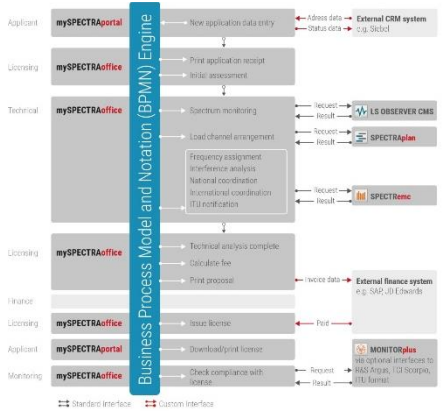
- Integration of business processes based on a central database
  - Within the organizations
    - Administrative spectrum management with technical spectrum management, radio monitoring, finance, CRM, etc.
  - With other national stakeholders
    - Public safety, defense, etc.
  - With international institutions or neighboring countries
    - International Telecommunications Union (ITU), multi-lateral agreement, etc.

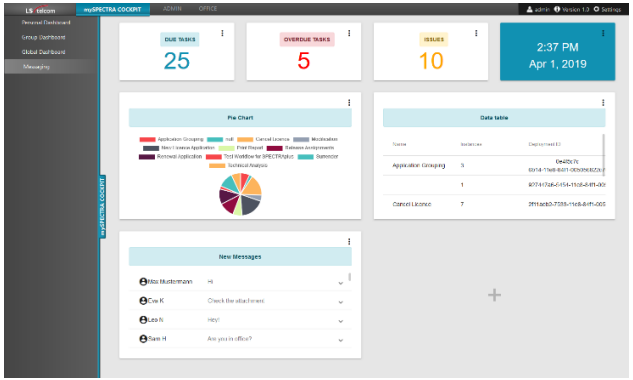
Manual vs. fully automated data exchange

Today’s mandatory requirements

- Automation of business processes
  - Application of professional workflow engines
  - Standardization/digitalization of business processes
  - Consistent and traceable business processing
  - Documentation of business processing steps

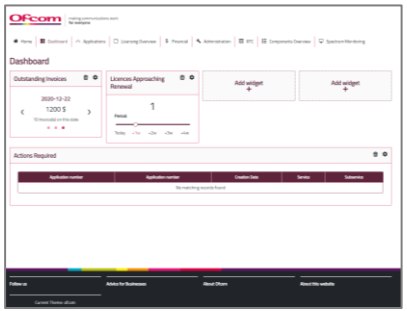






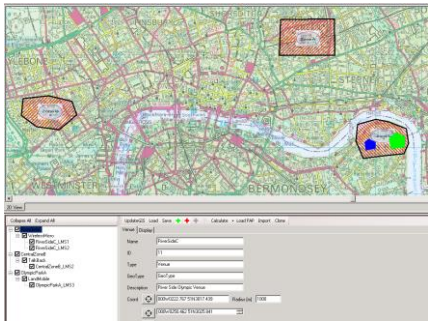
Today’s mandatory requirements

- Support of E-government strategies
  - Deployable on-premise and in the cloud
  - Public display of National Frequency Allocation Table
  - Online access to application and license data
  - Support of E-licensing and online payment



Today’s mandatory requirements

- Support of non-spectrum applications
  - Equipment type approval
  - Infrastructure licensing
  - Numbering management
  - Major special event management

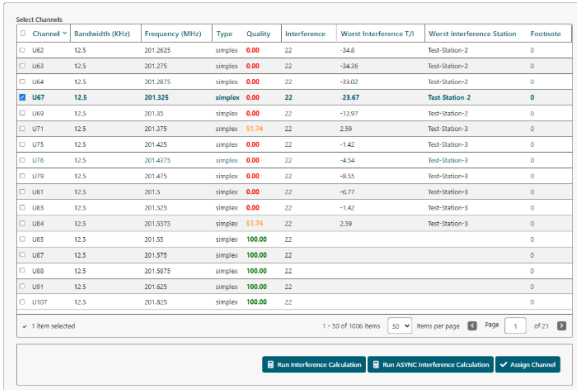


Looking forward – Outsourcing of frequency assignment to applicants

- Applicant starts online application process and enters relevant data

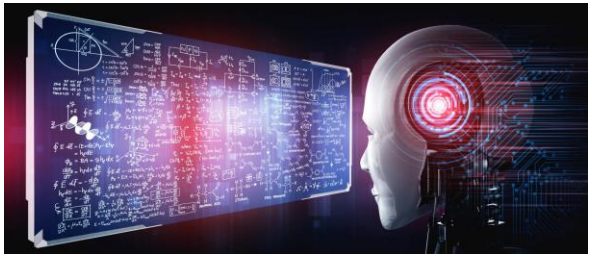
- Cloud-based calculation and display of channel availability based on interference analysis

- Frequency selection and assignment by applicant



Looking forward – Application of Artificial Intelligence

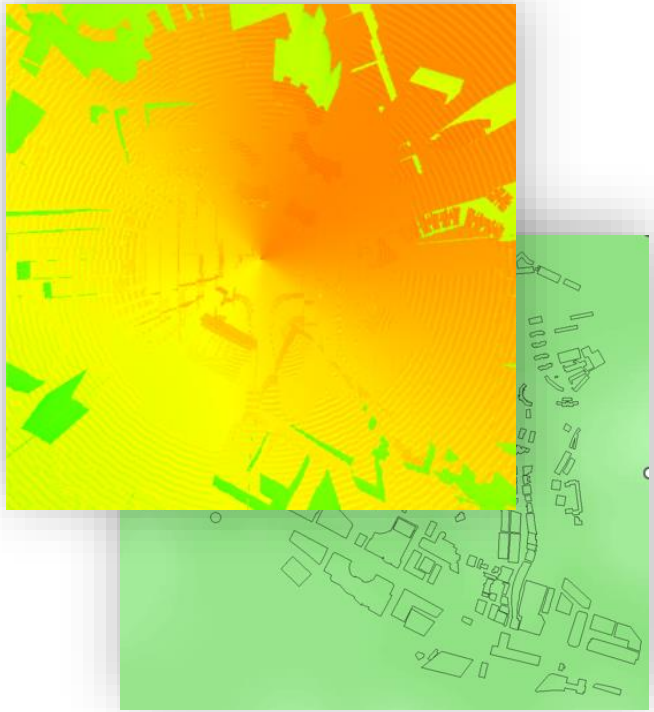
- Internal chatbots for staff
  - ITU Radio Regulations
  - Country specific telecommunications acts
  - Client specific databases
- External chatbots for applicants and licensees
  - Inquiries about application process and license costs
  - Identification of correct application forms
  - Automated application filing



Looking forward – Application of Artificial Intelligence

- AI based Wave Propagation

- Training of DL models with wave propagation results
  - Terrain Profiles as Input for DL models with precalculated field strength as label
  - Investigation of suitable DL models for AI wave propagation predictions
  - Adaptation of the trained AI wave propagation predictions to measurements



Conclusion

- Efficient and effective spectrum planning and coordination is more important than ever
- Professional tools/systems are mandatory for holistic spectrum planning, coordination and management
- AI provides the potential of becoming a game changer

Thank you for your attention

Heiko Ross I Hross@LStelcom.com

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