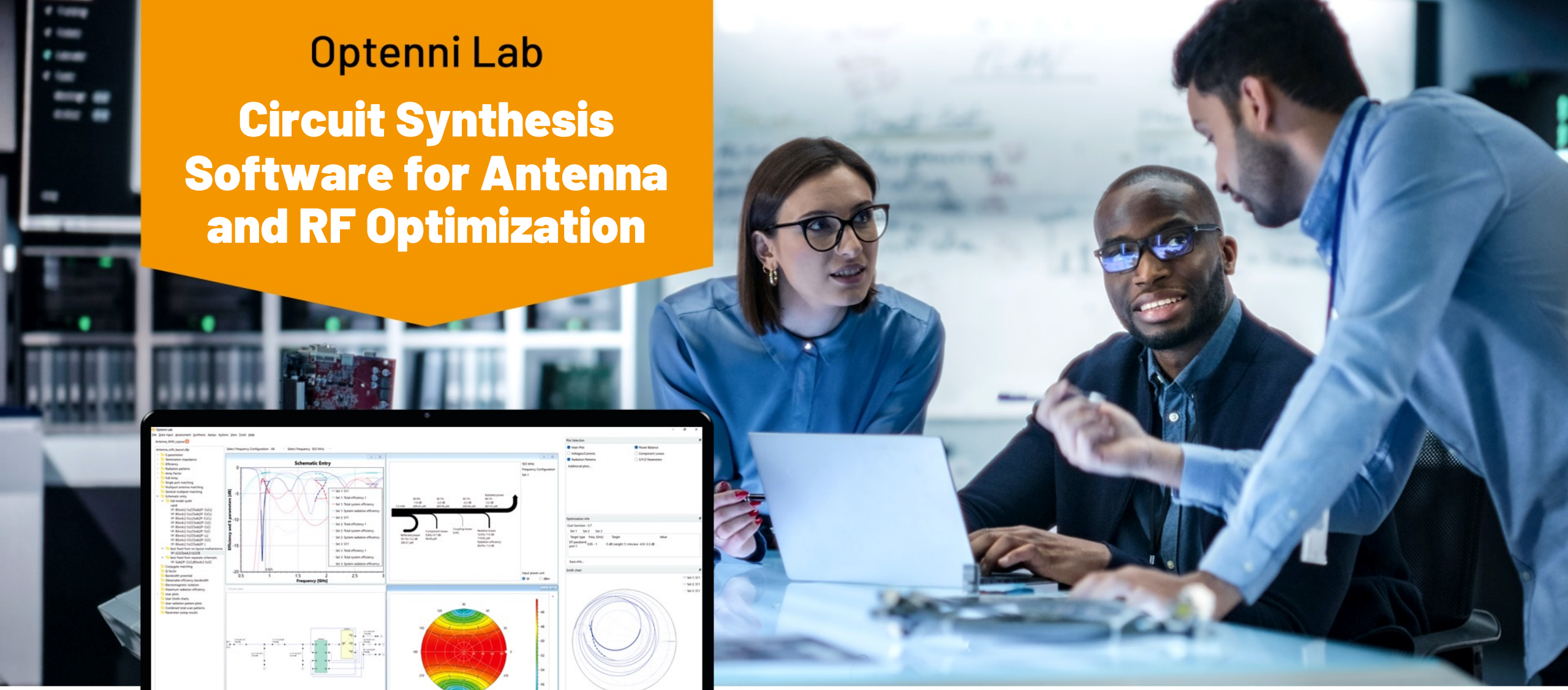
Optenni Lab

Circuit Synthesis Software for Antenna and RF Optimization



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Optenni Lab

Optenni Lab is the leading circuit synthesis software for antenna and RF optimization aiming at efficient assessment and optimization of antenna and RF systems at any design phase.

EXPLORE THEORETICAL LIMITS

Using Optenni Lab's innovative assessment tools antenna and RF designers can quickly evaluate, compare and rank new antenna designs. The tools reveal the theoretical upper limits for the wireless performance.

ACCELERATE YOUR DESIGN FLOW

Optenni Lab increases the productivity of antenna and RF designers by quickly and accurately synthesizing matching circuits using realistic layout models and vendor library component models for capacitors and inductors.

MAXIMIZE WIRELESS PERFORMANCE

Optenni Lab is designed to maximize the wireless performance taking into account various loss sources and layout effects. Robust designs with respect to varying usage environment of the antenna can automatically be synthesized.

Trusted by leading wireless innovators worldwide - 7 of top 10 tech giants use Optenni Lab to accelerate their design process.

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Design Flow

1 DATA INPUT

Import input data directly from EM simulators, network analyzers, or data files

Impedance, efficiency and radiation pattern data are supported

Multiple input data configurations are supported to optimize designs for varying operating conditions (e.g. wearable and mobile devices)

2 ASSESSMENT

Tools to quickly analyze the potential of antenna candidates:

- Bandwidth potential
- Electromagnetic isolation
- Maximum radiation efficiency
- Total scan pattern

3 SYNTHESIS

Choose the proper matching mode for your design:

- Single-port matching
- Multi-port matching
- Schematic entry

Define the optimization targets and circuit synthesis using

- Vendor library components
- Realistic layout models

Run the synthesis

- Powered by the latest algorithms
- Optimization runs can be queued to the Job Control Center

4 ANALYSIS

Draw conclusions and decide on the next steps using intuitive result visualization and plots

- How much power is lost, coupled and radiated, and where?
- Is the design robust against component tolerances?

Create reports using plot templates and user plots

Post-process and export data for next design phases and further analysis

Integration with your Antenna and RF design process

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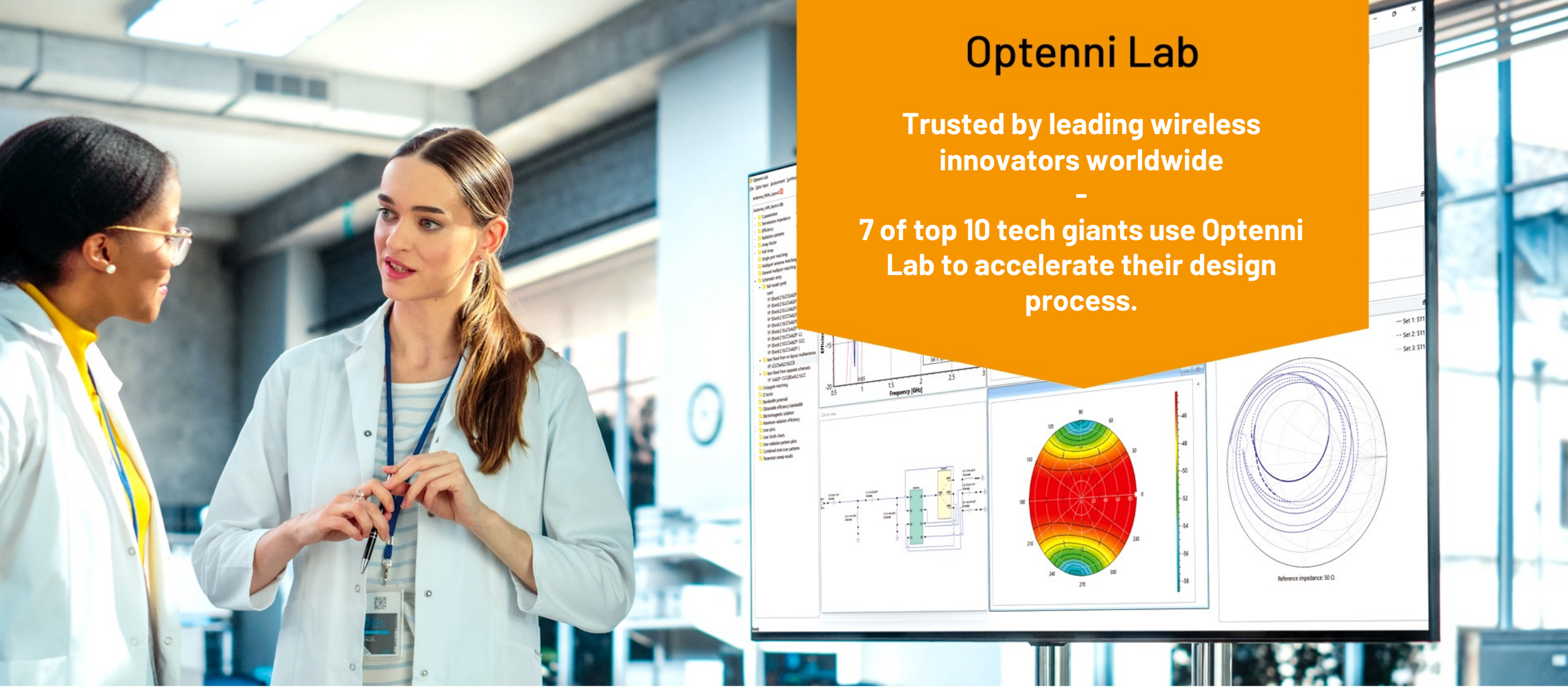

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Optenni Lab STANDARD

Optenni Lab Standard Edition:

- Single-port antenna designs like broadband and multiband antennas
- Automatic matching circuit synthesis
- Vendor component libraries
- Tolerance analysis
- Parameter sweeps
- Links with network analyzers
- Links with EM simulators

Optenni Lab PRO

Optenni Lab Professional Edition:

- All Standard Edition capabilities +
- Simultaneous multiport matching
- Tunable matching circuit design
- Schematic entry environment with arbitrary circuit wiring and additional component types
- Support for EM-simulated layout models
- Current and voltage calculations

Optenni Lab ARRAY MODULE

Optenni Lab Array Module:

- Advanced radiation pattern control capabilities for beamforming optimization and radiation pattern shaping
- Radiation pattern optimization with main lobe, side lobe, null and system efficiency targets
- Beam scanning range assessment
- Interactive tuning of canonical beam steering solutions

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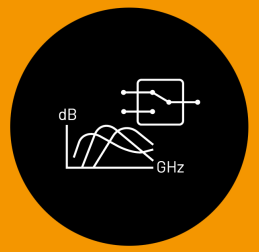
Typical design challenges where Optenni Lab is used 1/2

ANTENNA EFFICIENCY OPTIMIZATION

Optenni Lab synthesizes and optimizes broadband and multiband matching circuits which maximize the total efficiency of antenna systems. Optenni Lab takes into account several impedance environments, antenna radiation efficiency, component losses and tolerances. The effects of component layout can also be accurately modeled.

MULTIPORT ANTENNA MATCHING

Optenni Lab optimizes the total efficiency of multiport antenna systems by simultaneous synthesis and optimization of the matching circuits at all antenna ports. The coupling and isolation between the antenna elements are taken into account as well as the dependence of radiation efficiency on the port termination. Our multiport capabilities support an arbitrary number of antenna ports.



TUNABLE ANTENNA DESIGN

Optenni Lab is widely applied in the optimization of tunable antennas, which typically are frequency tunable antennas using aperture tuners. Optenni Lab supports switches, variable capacitor banks and more complex tuner chips as the tunable elements. Optenni Lab calculates the exact radiation efficiency and radiation patterns of the antenna system as a function of the aperture components.

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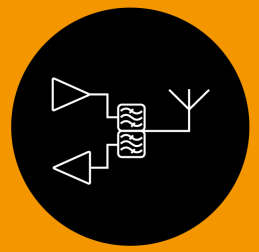
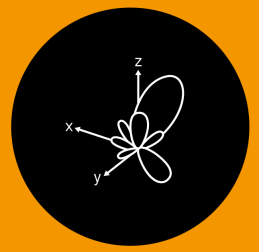
Typical design challenges where Optenni Lab is used 2/2



RF FRONT END DESIGN

In the design of the RF chain, Optenni Lab speeds up the matching of low noise amplifiers and power amplifiers. Optenni Lab is especially useful in the optimization of carrier aggregation scenarios, where multiple RF branches are active at the same time and in the codesign of the RF chain and realistic antennas.



RADIATION PATTERN CONTROL

Optenni Lab provides extensive analysis and optimization of antenna radiation patterns for antenna arrays and other multiantenna systems, including accurate beam scanning range assessment, interactive tuning of canonical beam steering solutions, and radiation pattern optimization with main lobe, side lobe, null and system efficiency targets.

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OPTENNI
Optenni, founded in 2009, develops professional design tools for antenna and RF engineers. Optenni employs customer-driven innovation, and partners with leading players in the wireless ecosystem.
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