OST®
ALWAYS ON. ALWAYS THERE.

AI-Optimized Spectrum Engineering for Safe Skies

Revolutionizing Aviation Safety with AI-Driven Spectrum Engineering

Challenge

The Federal Aviation Administration (FAA) relies on uninterrupted spectrum services to ensure safe and efficient flight operations. In dense urban environments, overlapping radio frequencies have led to measurable disruptions in Instrument Landing Systems (ILS). Incidents are reported at major hubs like Chicago O'Hare threatening precision navigation and flight safety, resulting in operational and regulatory challenges for engineers and controllers.

Transformation

OST leveraged AI and the Python Optimization Modeling Objects (PYOMO) framework to create a predictive spectrum management model. This system rapidly evaluates thousands of frequency configurations, selecting the optimal setup that minimizes interference while ensuring FAA compliance.

The engine evaluates thousands of possible combinations within seconds, identifying the most efficient configuration that balances technical constraints, operational priorities, and safety standards.

Outcome

OST applied AI-driven optimization modeling to transform spectrum management from a reactive process into a predictive and automated system. Using the PYOMO framework, OST developed an intelligent model that repacks local radio frequencies to eliminate interference while maintaining full FAA compliance.

The engine evaluates thousands of possible combinations within seconds, identifying the most efficient configuration that balances technical constraints, operational priorities, and safety standards.

Scalable Model

OST's optimization framework is adaptable across sectors, including Defense communications, Energy grid management, Transportation systems, Smart city infrastructure and alike. This versatility highlights OST's commitment to modernizing national systems through data science and AI innovation.

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