R.AI.DIO® Signal Processing Kit (SPK)

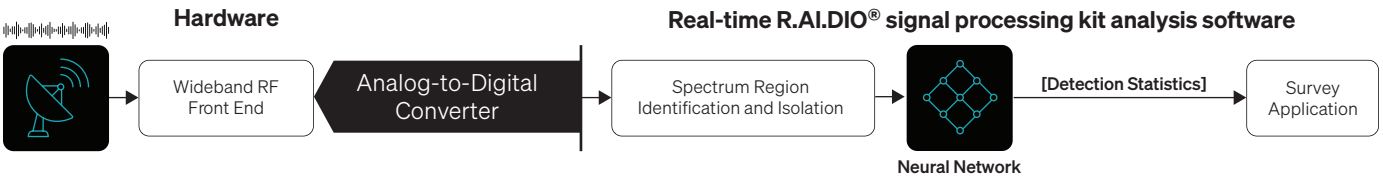
Booz Allen

Artificial Intelligence (AI)-Enabled Radio

Government agencies face increasing challenges in managing and interpreting vast amounts of radio frequency (RF) data. The complexity and volume of signals in the electromagnetic (EM) spectrum require advanced solutions to ensure efficient and accurate signal processing. R.AI.DIO® signal processing kit (SPK) addresses these challenges by leveraging artificial intelligence to enhance signal processing capabilities.

Real-Time Spectrum Survey and Monitoring

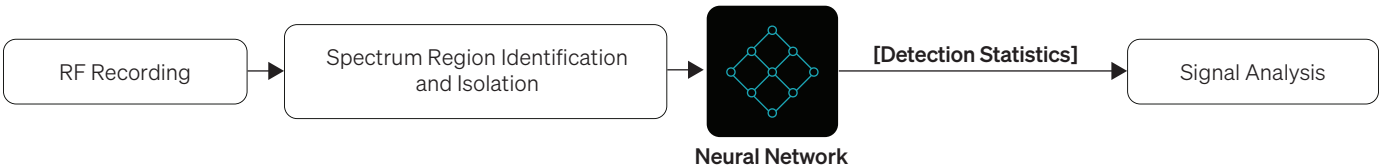
Booz Allen uses machine learning integrated with classical signal processing techniques to survey the EM spectrum, autonomously identify regions of interest, and characterize signals in real-time. Booz Allen uses these techniques to scale signals analysis subject matter expertise against large data volumes and enable opportunistic dynamic spectrum access in 5G radio access networks, ensuring seamless communication and efficient spectrum utilization.



Signal Analysis and Discovery

To scale and automate signal discovery in large RF datasets, R.AI.DIO® signal processing kit analyzes complex samples from RF receivers, identifies temporal and spectral regions with known and unknown signals, and isolates them for rapid analysis by neural networks. This automation allows analysts to focus on new signals, enhancing their ability to manage and interpret complex RF data.

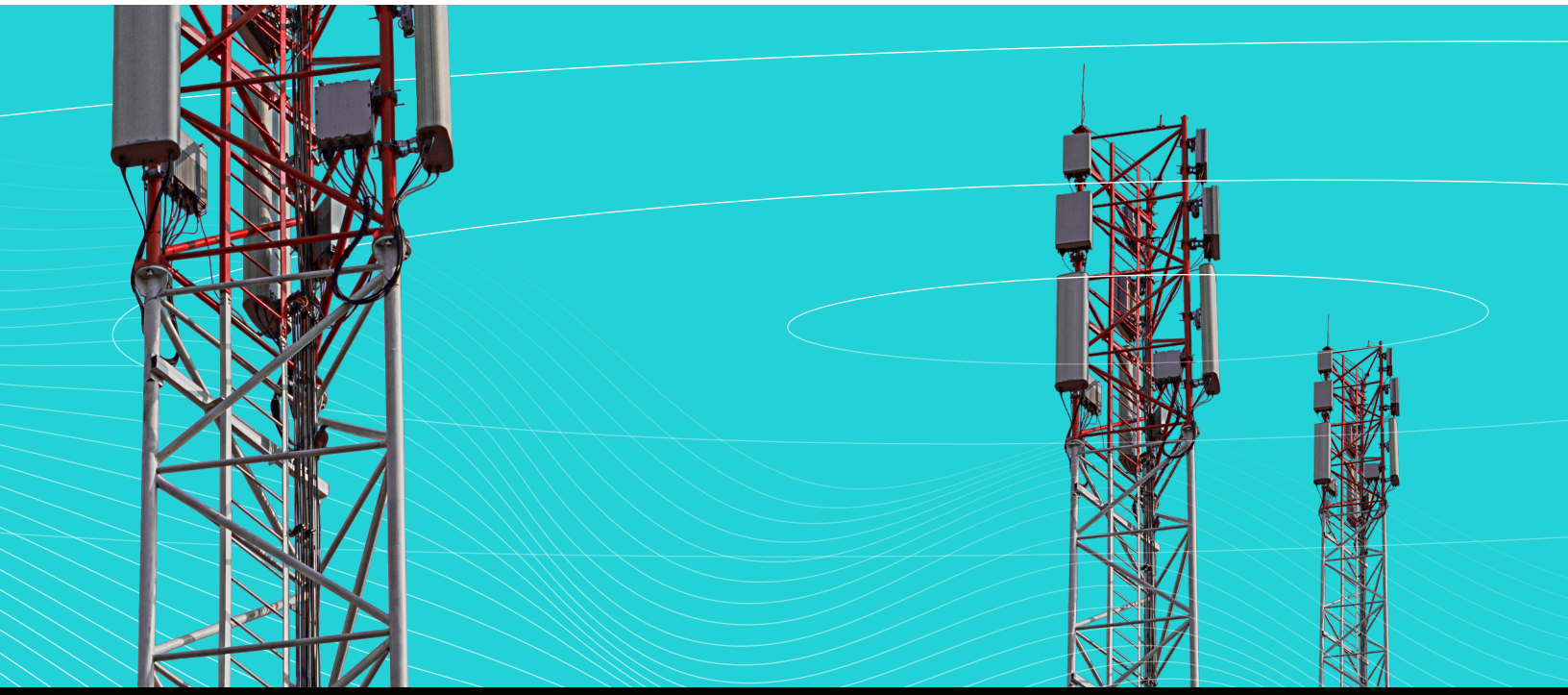
R.AI.DIO® signal processing kit analysis software



Specific Emitter Identification (SEI)

RF specific emitter identification (SEI), or RF fingerprinting, determines if a message transmission is from a known RF transmitter by comparing the physical characteristics of the received signal with known transmitter characteristics. Unique features may include carrier frequency offset, phase noise, clock jitter, IQ imbalance, and properties of amplifiers, filters, and antennas. SEI has been demonstrated on various signal types, including radar, ADS-B, RFID, Zigbee, Wi-Fi, Bluetooth, and 2G/3G/4G/5G. As an example, Booz Allen leverages R.AI.DIO signal processing kit's machine learning capabilities into real-time airspace monitoring with SEI features to identify known and unknown aircraft, and aircraft or UAS that may be spoofing their transponder ID.

R.AI.DIO® enhances government organizations' ability to process growing RF collections efficiently, ensuring the speed and accuracy necessary to address modern threats and maintain operational superiority.



Booz Allen®

About Booz Allen

Booz Allen is the advanced technology company delivering outcomes with speed for America's most critical defense, civil, and national security priorities. We build technology solutions using AI, cyber, and other cutting-edge technologies to advance and protect the nation and its citizens. By focusing on outcomes, we enable our people, clients, and their missions to succeed, accelerating the nation to realize our purpose:
Empower People to Change the World.®

Learn More: BoozAllen.com/R.AI.DIO ↗