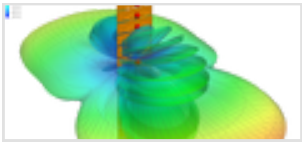
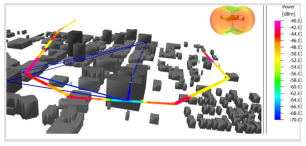
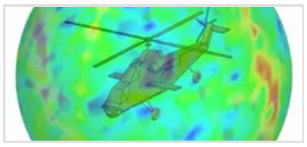
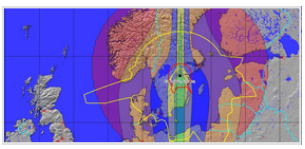
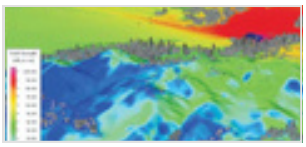
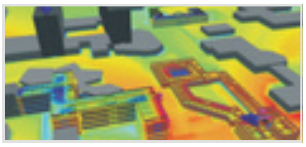
SOLUTIONS FLYER

CONNECTIVITY IN AEROSPACE

Reliably transmitting and receiving information is mission critical in aerospace, where always-on equipment must exchange data and communications without fail. Managing electromagnetic compatibility and electromagnetic interference (EMC/EMI) and predicting system performance amid varying and harsh conditions on land, at sea, and in space is complex. With Altair's connectivity solutions, organizations can optimize communications systems—easily enhancing reliability and range while reducing size, weight, and energy consumption—and handle vast radio frequency and electronic domains with unmatched precision and efficiency. Whether you're designing a high-performance antenna or array for integration into a complex communications system or managing a large-scale connectivity project where cost, time, and accuracy are critical, Altair can help.

Concept to Advanced Design and Testing

With its unique ability to solve electrically large problems quickly and accurately, Altair empowers aviation, space, and defense organizations to design robust, reliable communication systems and networks. By leveraging AI-powered engineering solutions that handle multiphysics and multi-disciplinary simulation, users of all skill levels can evaluate system and system-of-system performance across expected and what-if scenarios—indoor and outdoor—with confidence and precision throughout the design development cycle.

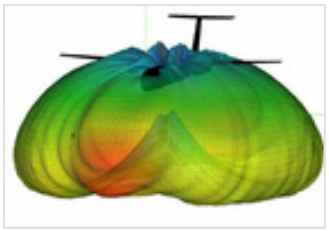
Digital Engineering	Digital Capabilities Assessment	Digital Testing and Operations
		
Component	RF Spectrum Allocation and Management	Virtual Environments
		
System	Large Scale Domain	Outdoor
		
Learning Digital Twin	Large Scale Multi-Domain	Urban | Indoor

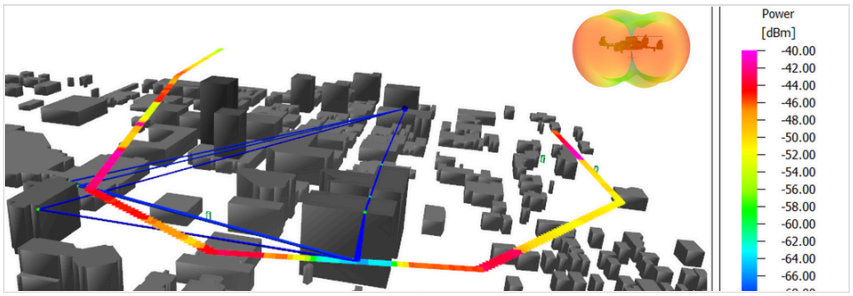
> By using an accurate, accessible digital twin, we can easily optimize multiphysics performance and evaluate design sensitivities while also reducing physical prototyping.
>
> Romano Iazurlo
> Chief Technology & Innovation Officer
> Leonardo S.p.A.

Read the whole story:
Getting the Signal with Digital Twin

Antenna Design, Placement, and Coupling

Design a wide range of antenna types including wire, microstrip, horn, aperture, lens, reflector, conformal, and phased-array antennas. Analyze and optimize antenna placement and coupling, including antennas mounted on electrically large structures or on moving platforms exposed to changing environments and weather conditions. Virtually design and test radomes for antenna protection, accounting for aerodynamic performance, electromagnetic transparency (including frequency-selective surfaces), and vibration impact.



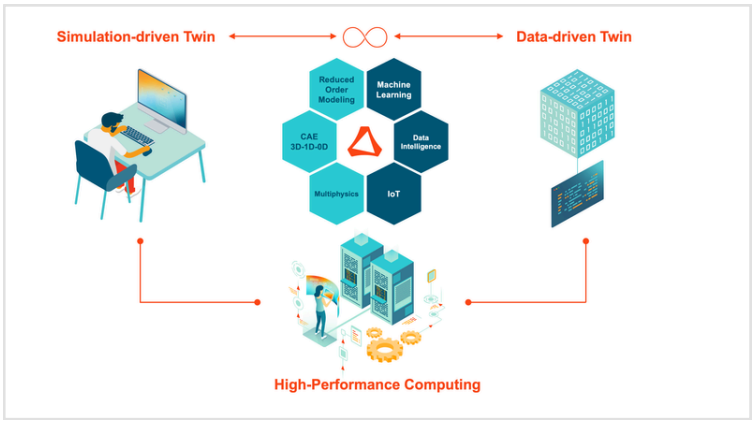


Plan and Optimize Whole System Performance

- Simulate wireless coverage and interference to plan effective radio networks for aeronautical, satellite, and terrestrial communications.
- Model radio links across environments such as buildings, cities, nations, and battlefields.
- Analyze and manage the distribution of valuable radio spectrum assets to maximize utilization while ensuring compliance with regulations, standards, and safety requirements.
- Evaluate antenna performance on a digital twin of your airborne asset. Evaluate designs in virtual urban or rural environments, reducing the need for physical flight testing.
- Conduct comprehensive EMI analyses, including immunity and emissions across cables, antennas, and other electronic components.
- Simulate shielding effectiveness, electromagnetic pulses, lightning effects, high-intensity radiated fields (HIRF), and assess behavior in reverberation and anechoic chambers.
- Automate the simulation and visualization of radiation hazard levels including calculating specific absorption rate (SAR) values to meet human safety guidelines from ICNIRP.

1000x ▲
FASTER SIMULATION

Cost ▼
WITH ALTAIR UNITS



Unleash AI-Powered Simulation, Data Analytics, and HPC Platforms

- Accelerate design exploration and automate processes with AI-embedded workflows.
- Improve decision-making with real-time data-driven insights.
- Deploy machine learning models that can speed up analysis up to 1000x faster than traditional solver-simulation methods.
- Get design results faster using secure HPC workload management.
- Optimize critical aerospace workloads for boosted performance.
- Build intelligent digital twins that integrate data from physical and virtual sensors, simulations, and historical data to predict asset behavior and unlock actionable insights.
- Access solutions you need when and where you need them with Altair Units.

Data Analytics

Simulation

IoT

HPC