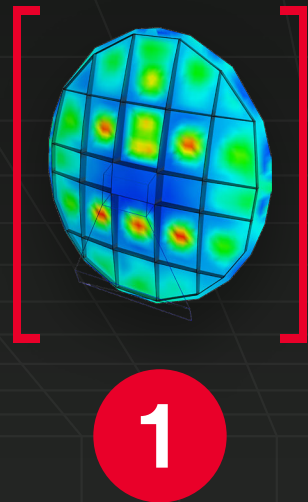


Vibroacoustic Simulation of Payloads & Launch Vehicles

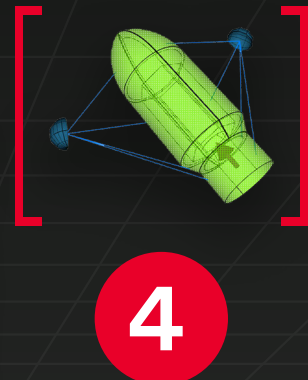
6 Ways on How Pre-Test Simulation with Keysight's Vibro-Acoustics VA One Ensures Your Mission's Success

Apply SEA, Hybrid, and FE methods to assess the strength of acoustically sensitive structures during launch, flight, and deployment by validating **Sound Pressure Levels, dynamic stresses, accelerations, strain, and forces** across the full frequency spectrum.



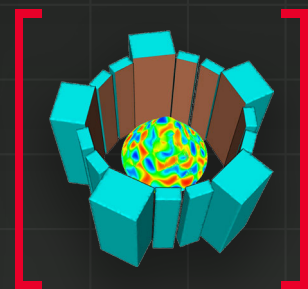
1

Predict high-frequency shock effects on space components using Keysight's (VA One) Shock Module, SEA capabilities, and Virtual Modal Synthesis and Simulation (VMSS) to **ensure component integrity during rocket separation.**



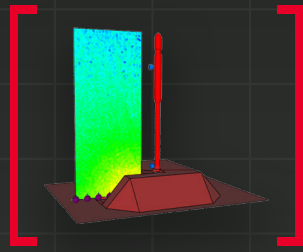
4

Prepare for your on-site DFAT® by simulating a diffuse acoustic field, testing different speaker configurations, and delivering **pre-test structural qualification**—without needing specialized acoustic reverberation rooms and **avoiding the risks and costs of transporting** sensitive components to remote test facilities.



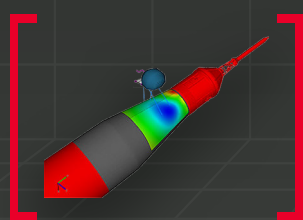
5

Use Ray Tracing to accurately simulate liftoff acoustic load on the fairing, enabling **full-frequency analysis of complex models with minimal computational cost.**



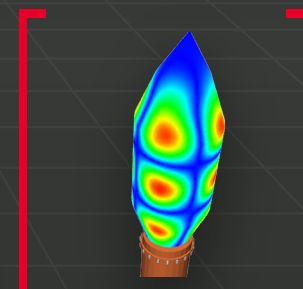
2

Analyze Aero-Vibroacoustic (AVA) effects during ascent phase by coupling vibroacoustic simulation with CFD to **account for pressure fluctuations**, characterized by Wavenumber-Frequency Spectrum.

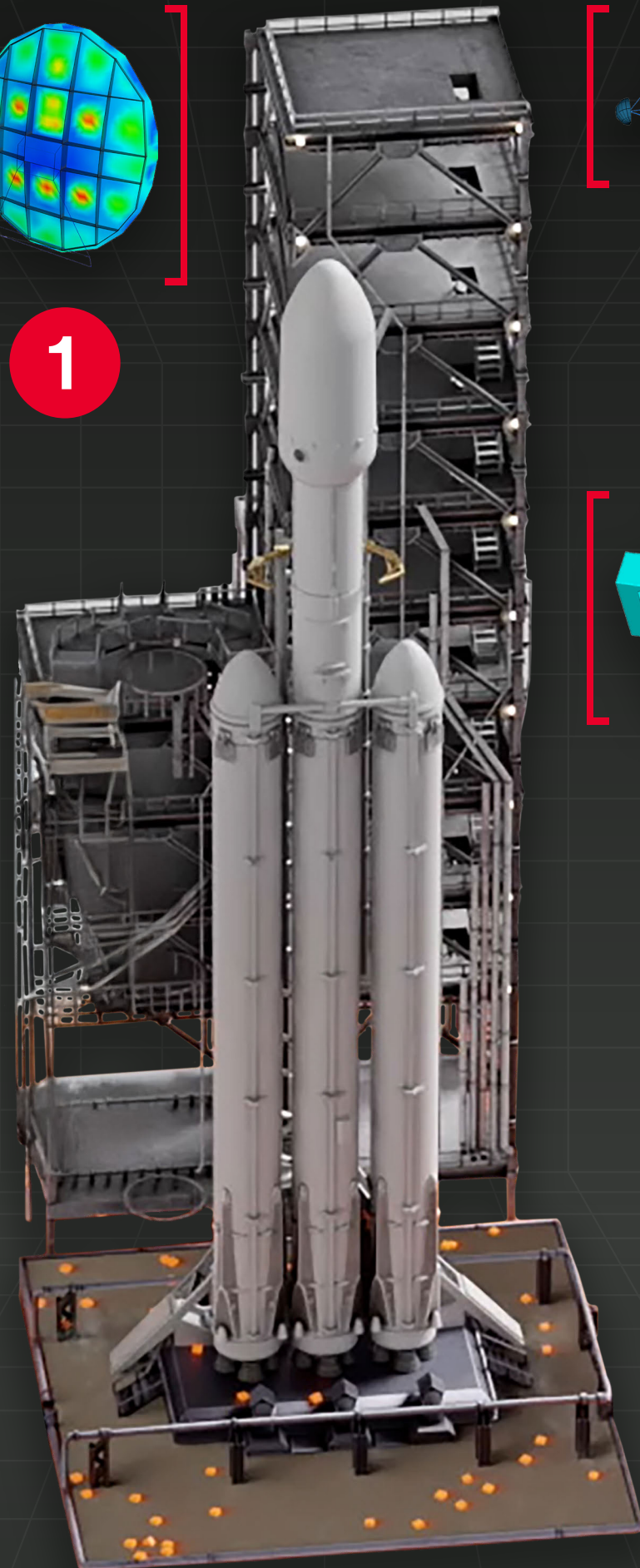


3

Simulate diffuse acoustic fields to pre-qualify spaceflight hardware, **assess structural integrity**, and optimize designs early in the design cycle.



6



When developing space technologies, payloads must adapt to varying vibroacoustic conditions across different launch vehicles, while vehicles must minimize stress on payloads. Virtual vibroacoustic simulations enable combined analysis of both **predicting real-world performance and ensuring successful testing.** These pre-test simulations help you optimize sensor placement, fine-tune test conditions, and minimize the risk of under- or over-testing hardware.

Looking for ways to meet global space standards more easily, reduce physical testing, and accelerate design cycles? Discover how simulation of high-frequency acoustic stress, shock loads, and full-system dynamics with Keysight's VA ONE can drive your space project's success.

[Discover Our Software](#)