Passing the FAA 16g sled test is no trivial matter for highly optimized aluminum and composite airplane seats. The objective of this LS-DYNA study was to ensure that the client’s seat could be validated against the test sled results and that subsequent seat versions would pass “the first time”.

16g Seat Crash Test
TSO-C127a / SAE AS8049A / 14 CFR Part 25.562
A projectile penetration study was conducted to assess the protective capabilities of a standard aluminum skinned foam sandwich panel. These types of panels are commonly used to create lightweight truck-mounted mobile shelters. For this analysis work, a section of the panel was idealized into a plate and brick FEA model. The panel was subjected to a secondary ballistic impact penetration of a grenade fragment falling at terminal velocity. The final results allowed the client to meet their design requirements without the need of experimental testing.
LS-DYNA turbine burst simulation of an air drive power turbine. Analysis work led to significant costs and schedule savings; e.g., each simulation was approximately $5k and four days as compared to the burst tests at over $100k and 30 days.
Impact Analysis using Discrete Element Method

LS-DYNA was used in a combined structural / DEM model for the simulation of a large rock-drop on an apron feeder (AF) commonly used within the mining industry. Results show that if the AF is kept filled with material, the impact of large rocks is almost completely mitigated.
An ultra light-weight carbon fiber composite electronic device was drop tested through a range of 26 positions (MIL-STD 810e). The shell of the unit was a blend of carbon and Kevlar layers for increased impact resistance. The finite element model was used to document experimental drop test failures and then to implement solutions. The modeling results were reviewed by a team of external experts and accepted for production.
Bus Seat Development

Sports Equipment

Drop Test of Consumer Products

Drop Test of Electronics

Human Biometrics

Plastic Structures
Cargo Net Development
Impact Analysis
Impact of Plastic Foams

Plastic Thread Design
Modal Analysis
Digger Tooth Failure Simulation
Electron Beam Welding  
Elastic-Plastic Contact  
Pyro-Shock Analysis  

D.O.E.R. Glass Bathysphere  
Medical Equipment  
Fracture Mechanics
Ballistic Shock Loading

Max. Load Failure Analysis

Hand-Held Scanner Drop Test

Toothbrush Spring Design

Non-Linear Buckling of Sub

Medical Device – Plastic Snap-Fit
Disk Burst Containment

Locomotive Fuel Tank

SPH Bird-Strike

Hyperelastic Silicone Seal Design

General LS-DYNA

www.PredictiveEngineering.com for additional information on projects.