

Advanced vibro-acoustic analysis combining ACTRAN and NASTRAN

## KEY FEATURES

- > Analysis of fully trimmed models combining NASTRAN body-in-white models with ACTRAN trim models.
- > Import of NASTRAN super-elements into ACTRAN.
- > Export of ACTRAN components to NASTRAN using DMIG data blocks.
- > Support of most NASTRAN brands (MSC, MD, NX, NEi)

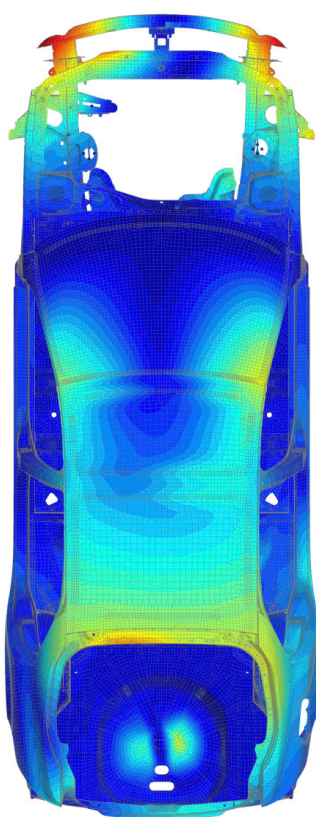


## Product overview

### Combine the strength of ACTRAN and NASTRAN for advanced vibro-acoustic modeling

## Target applications

- > Acoustic transmission through components in real-life mounting conditions
- > Trimmed body modeling using a combination of ACTRAN detailed models in physical coordinates and a NASTRAN body-in-white modal model



ACTRAN is a powerful tool for modeling and analyzing complex vibro-acoustic systems and specifically trim components. Such components are usually made of materials with high damping and strong acoustic absorption characteristics; as such they have a significant influence on the overall vibro-acoustic behavior of the structure.

Accounting for high damping very often relies on the use of physical coordinates, hence ACTRAN models are usually available in physical coordinates.

NASTRAN is the reference tool for vibro-acoustic analysis of lightly damped structures and cavities. It features efficient modal analysis solution sequences, making it suitable for handling large models like automotive vehicle body-in-white or an aircraft fuselage. NASTRAN models are usually available in modal coordinates.

ACTRAN for NASTRAN provides CAE engineers advanced features for mixing the best of both worlds: ACTRAN physical model and NASTRAN modal model. Three types of combined models may be created:

- 1 ACTRAN for NASTRAN is able to merge a set of ACTRAN models of individual trim components with a NASTRAN body-in-white model in order to create a fully trimmed body vibro-acoustic model.
- 2 An ACTRAN model may be set in its real-life working environment by connecting it to an existing NASTRAN model (e.g. a detailed ACTRAN model of a layered windshield may be connected to a NASTRAN model of the vehicle body).
- 3 A NASTRAN model may be enriched by including a reduced ACTRAN model of a specific component. The ACTRAN component is defined as a DMIG data block in the NASTRAN deck.

ACTRAN for NASTRAN makes the vibro-acoustic analysis of fully trimmed bodies possible. To model the problem with both efficiency and accuracy, Free Field Technologies develops the innovative hybrid methods of ACTRAN for NASTRAN. With these hybrid methods, the strength of modal and physical approaches are combined and their weaknesses circumvented.

# ACTRAN for NASTRAN

## THE ACTRAN SOFTWARE SUITE

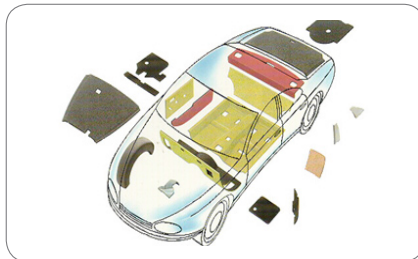
ACTRAN is the most complete acoustic, vibro-acoustic and aero-acoustic CAE software suite. Under a common technological umbrella provided by the finite and infinite element method, ACTRAN provides a rich library of elements, material properties, boundary conditions, solution schemes and solvers. ACTRAN is a high performance, high productivity, high accuracy modeling environment suiting the needs of the most demanding engineers, researchers and teachers and empowering them with the tool they need for solving the most challenging acoustic problems.

## FREE FIELD TECHNOLOGIES

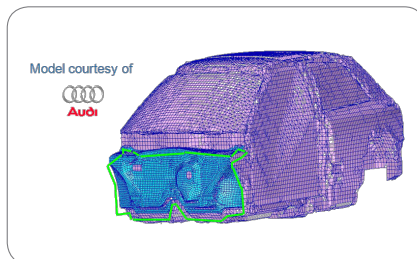
Free Field Technologies develops, maintains, supports and sells the ACTRAN acoustic CAE software suite. The company also provides related support, technology transfer, engineering, technical support, training and customization services.

FFT operates from its headquarters in Mont-Saint-Guibert (Belgium) and from local offices in Toulouse (France) and Tokyo (Japan). ACTRAN is distributed worldwide by a dense network of partners; please contact us for details of your nearest partner.

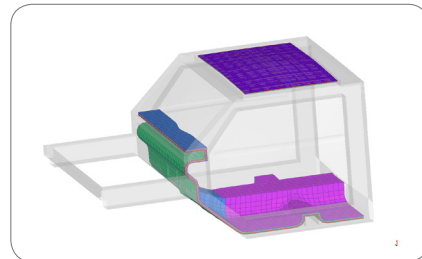
[www.fft.be](http://www.fft.be)



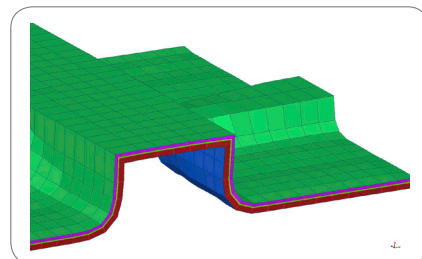
The use of acoustic trim is ubiquitous in cars. ACTRAN for NASTRAN provides an efficient tool for modeling the NVH impact of trim components in a car.



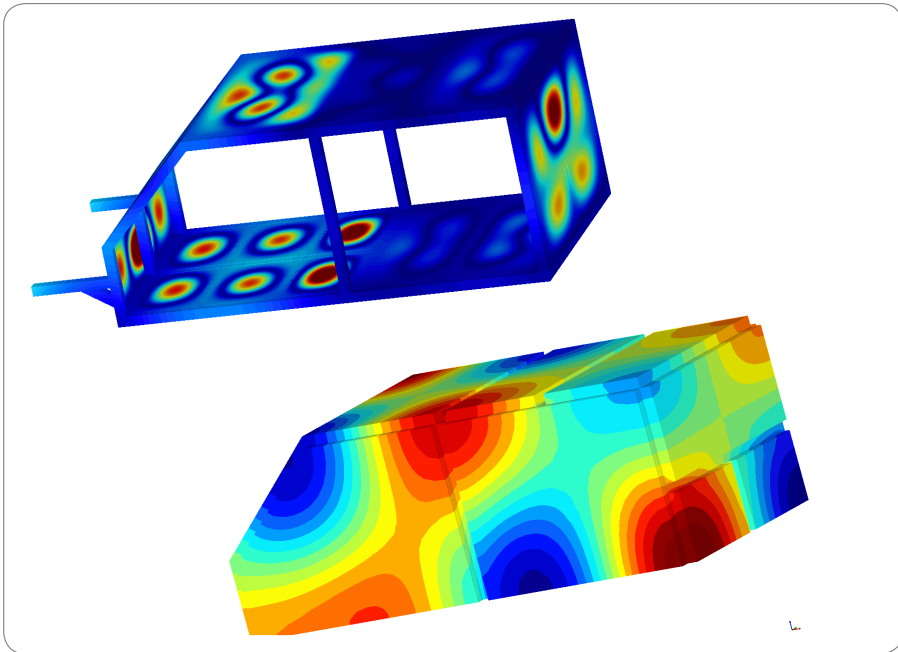
Import of NASTRAN superlements into ACTRAN.



Truck cabin coupled to three trim components.



ACTRAN multilayered trim component.



Structure and cavity maps for a coupled cavity-trim-structure model.

FREE FIELD TECHNOLOGIES

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