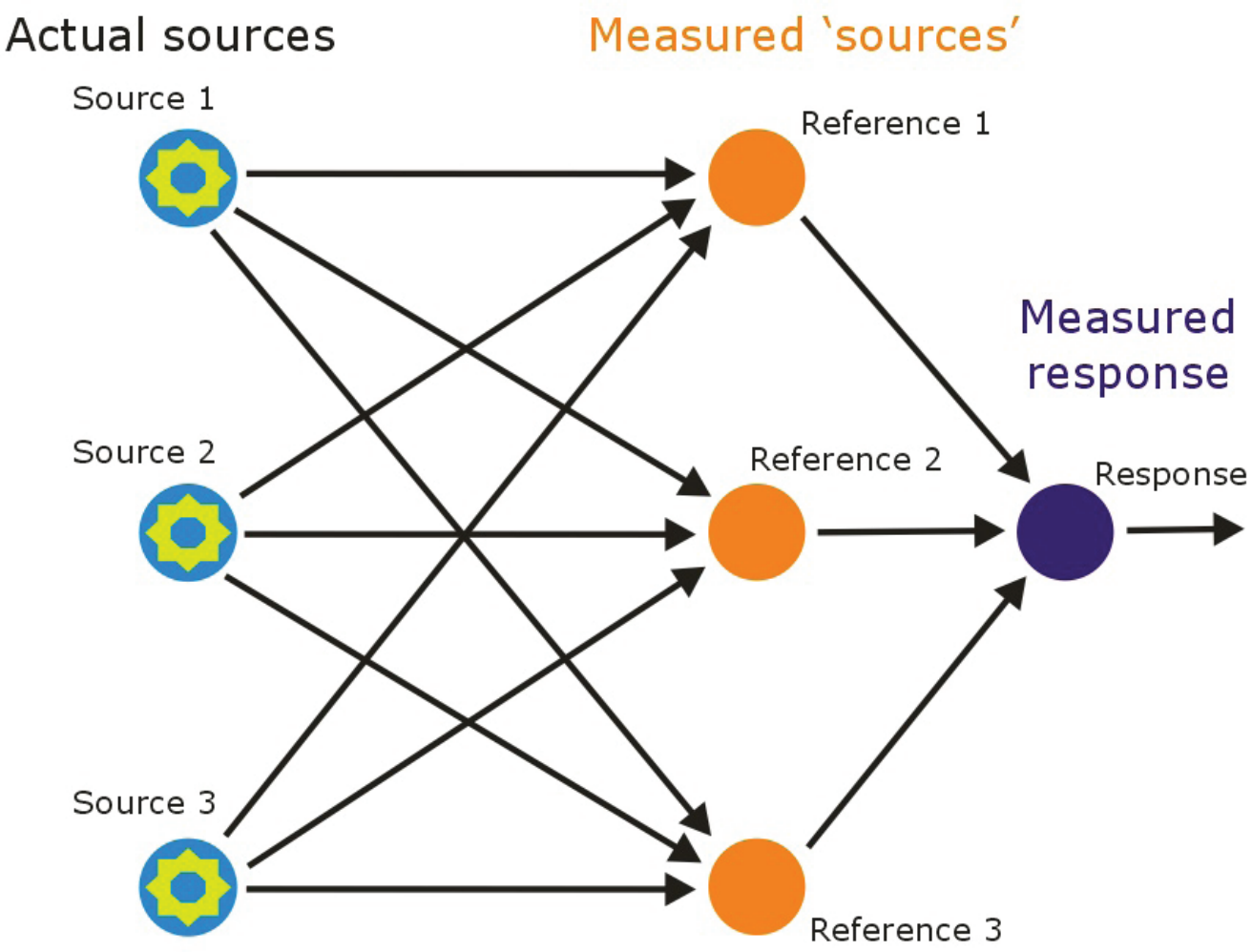
Prosig Data Analysis Software

Source Path Analysis

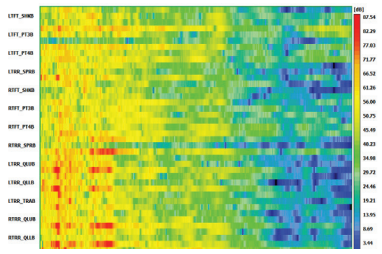
Which paths are most critical in transferring energy to the vehicle interior?

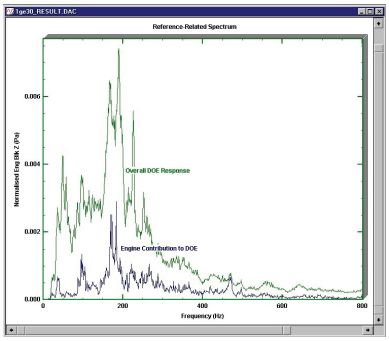


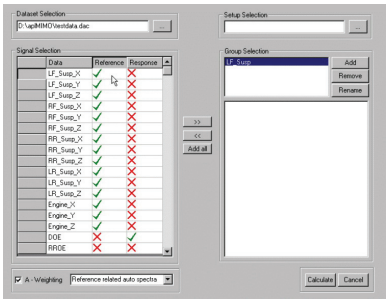
The interior noise & vibration in a vehicle compartment is caused by various contributing exterior sources – primarily suspension and engine vibration.

This raises two fundamental questions:"Which sources cause the most audible or tactile interior response?" and "Which paths are the most critical in transferring energy from the sources to the vehicle interior?"

Transfer Path Analysis (also known as Noise Path Analysis or Source-Receiver Path Analysis) attempts to answer these questions by relating the vibrations measured at different locations around the vehicle to the sounds and vibrations measured inside the vehicle.







The interior noise & vibration in a vehicle compartment is caused by various contributing exterior sources – primarily suspension and engine vibration. This raises two fundamental questions:"Which sources cause the most audible or tactile interior response?" and "Which paths are the most critical in transferring energy from the sources to the vehicle interior? Transfer Path Analysis (also known as Noise Path Analysis or Source-Receiver Path Analysis) attempts to answer these questions by relating the vibrations measured at different locations around the vehicle to the sounds and vibrations measured inside the vehicle.

The first stage of experimental Transfer Path Analysis is the computation of the Principal Components of the system using Singular Value Decomposition (SVD). The SVD computation produces a transformation (eigenvector) matrix that is used to derive virtual cross spectra between the virtual (vibration) references and the measured (sound/vibration) responses. These virtual cross spectra are then used to calculate Reference Related Auto (RRA) spectra at every response position. Each RRA spectrum is related to just the coherent contributions from a particular reference source input.

Full Transfer Path Analysis requires not only data at the Source and Response locations, but also frequency response (FRF) functions referenced to the attachment points of the vibration isolators (anti-vibration mountings). The software estimates the dynamic forces present at the isolators and determines the contribution from each location as perceived at the (driver) response positions. The various contributions from the paths are ranked according to their severity at different frequencies or speeds.

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Source Path Analysis

Features

- **Transfer Path Analysis**
- **Source Contribution Analysis**
- **Path Contribution Ranking**

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