

SIMPACK ANALYSIS AT LAND ROVER

Bob Thurman



LICENSES

- Used SIMPACK for 4 years.
- Currently 2 licenses in Land Rover held by Chassis Design Analysis.
- Are investigating further uses.



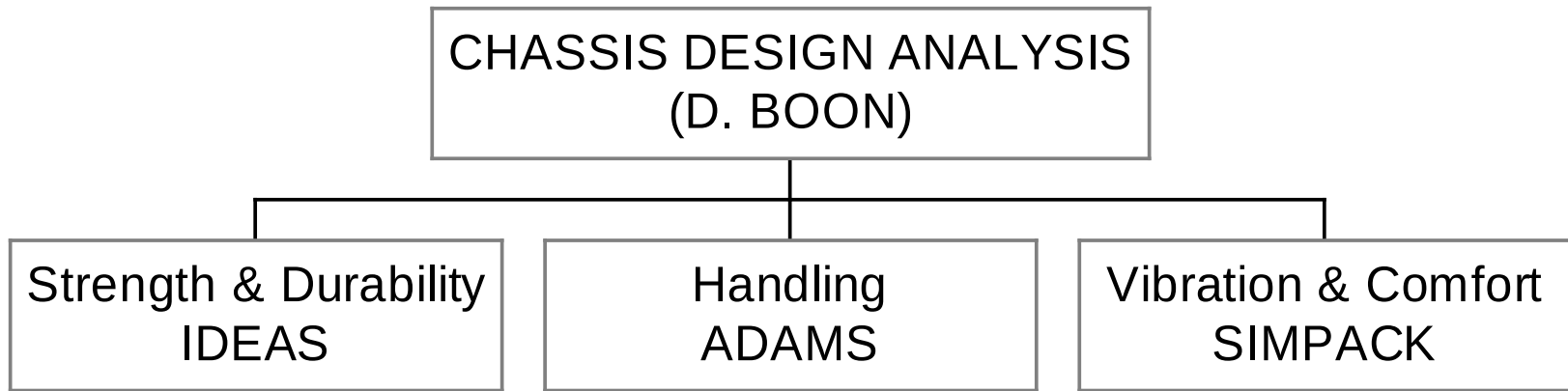
POWER TRAIN
ANALYSIS

BODY
ANALYSIS

VEHICLE
REFINEMENT
ANALYSIS

CHASSIS
ANALYSIS





WHY USE SIMPACK?

- Solver much quicker than ADAMS.
- Solver more robust than ADAMS.
 - ADAMS can suffer from numerical instability.
- The addition of flexible bodies is straightforward.



WHY USE ADAMS?

- Many people trained.
- Customised analysis processes.
- Group standard handling tool.

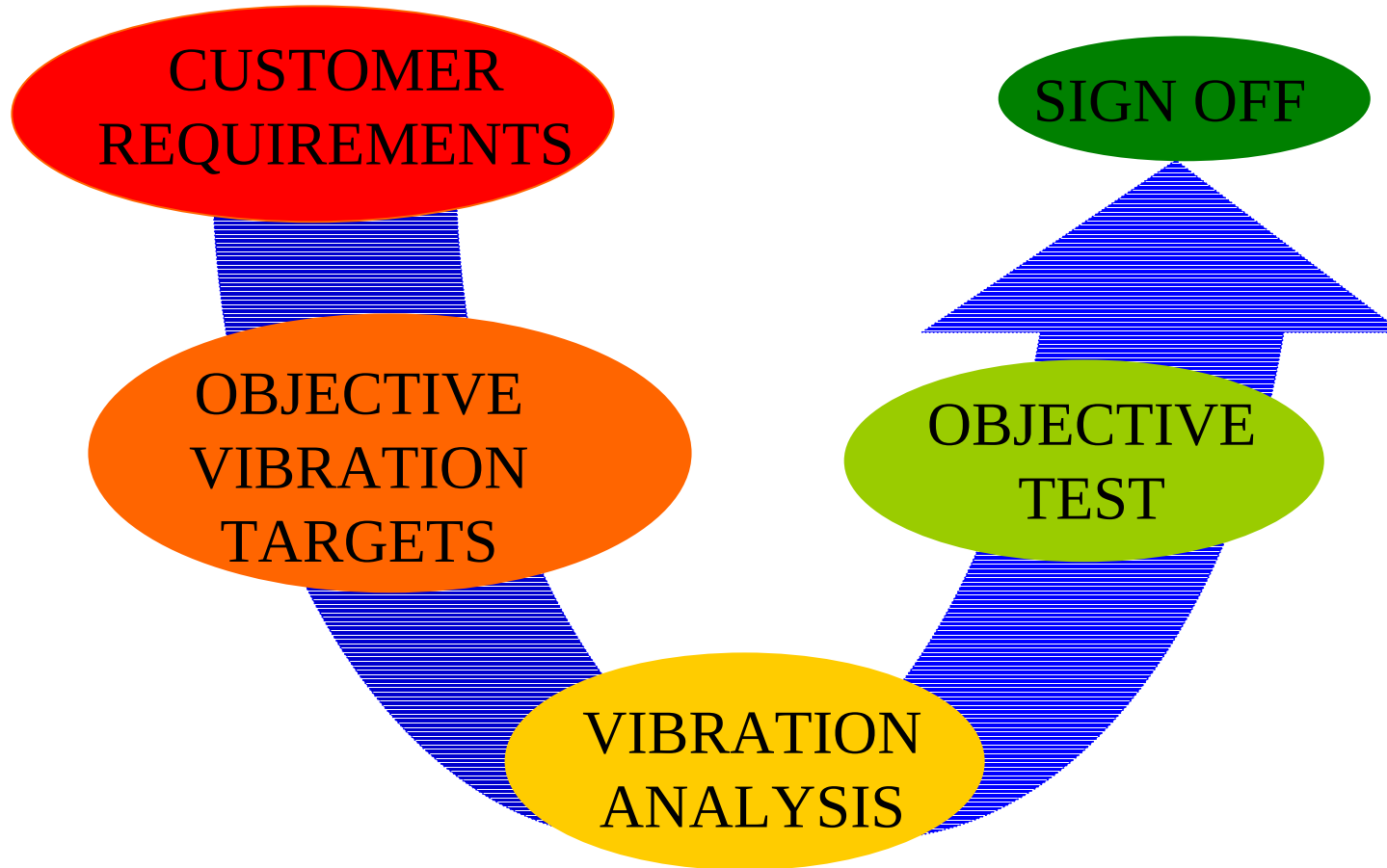


USERS

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ANALYSIS PROCESS



ANALYSES COVERED

- RIDE.
- TIP IN/ TIP OUT.
- SHUDDER.
- IDLE.
- SHIMMY (NIBBLE).
- + GENERATE LOADS.

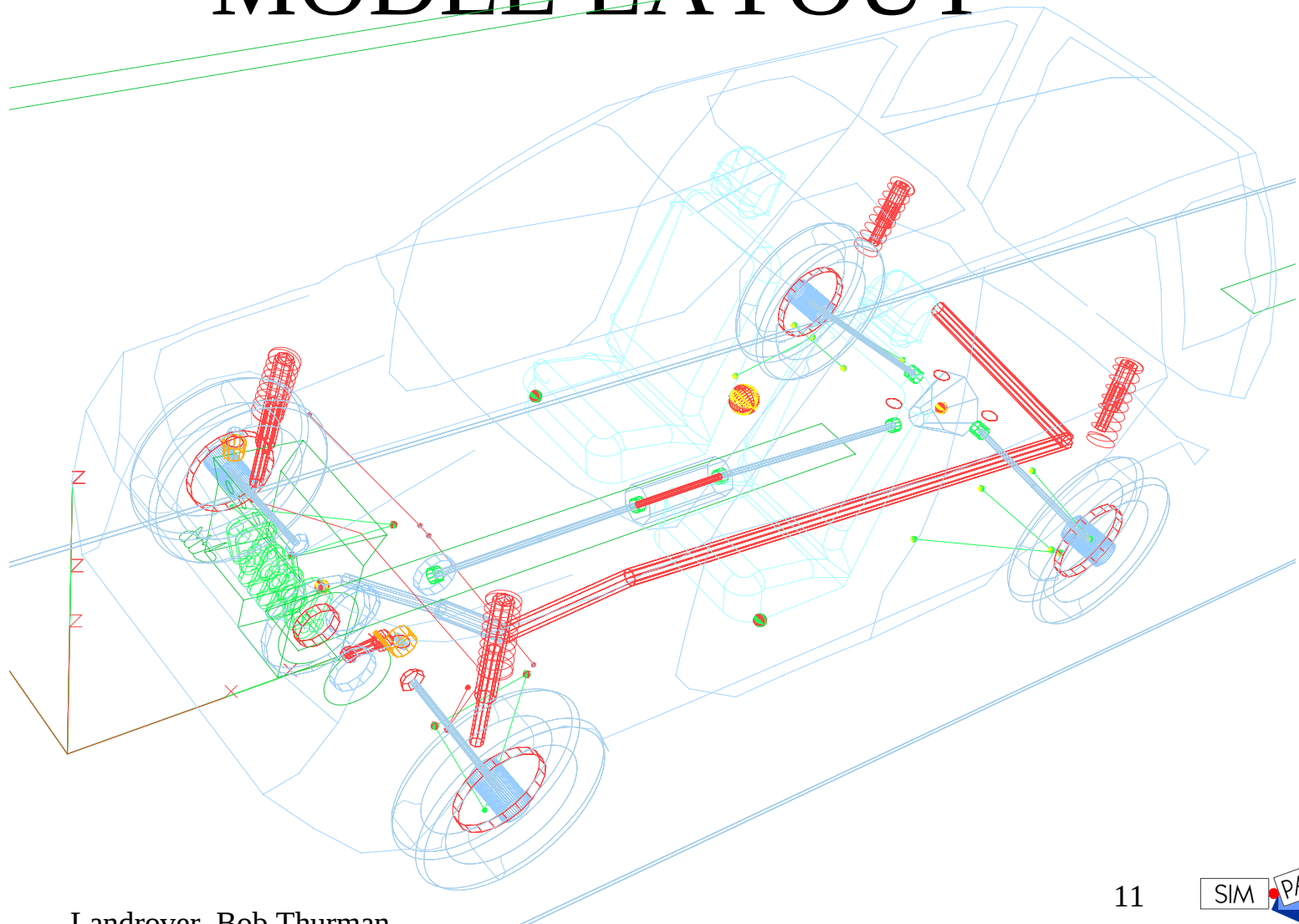


MODEL TYPES

- Generally use a full vehicle model with all suspension components modelled.
- Successfully using flexible bodies.

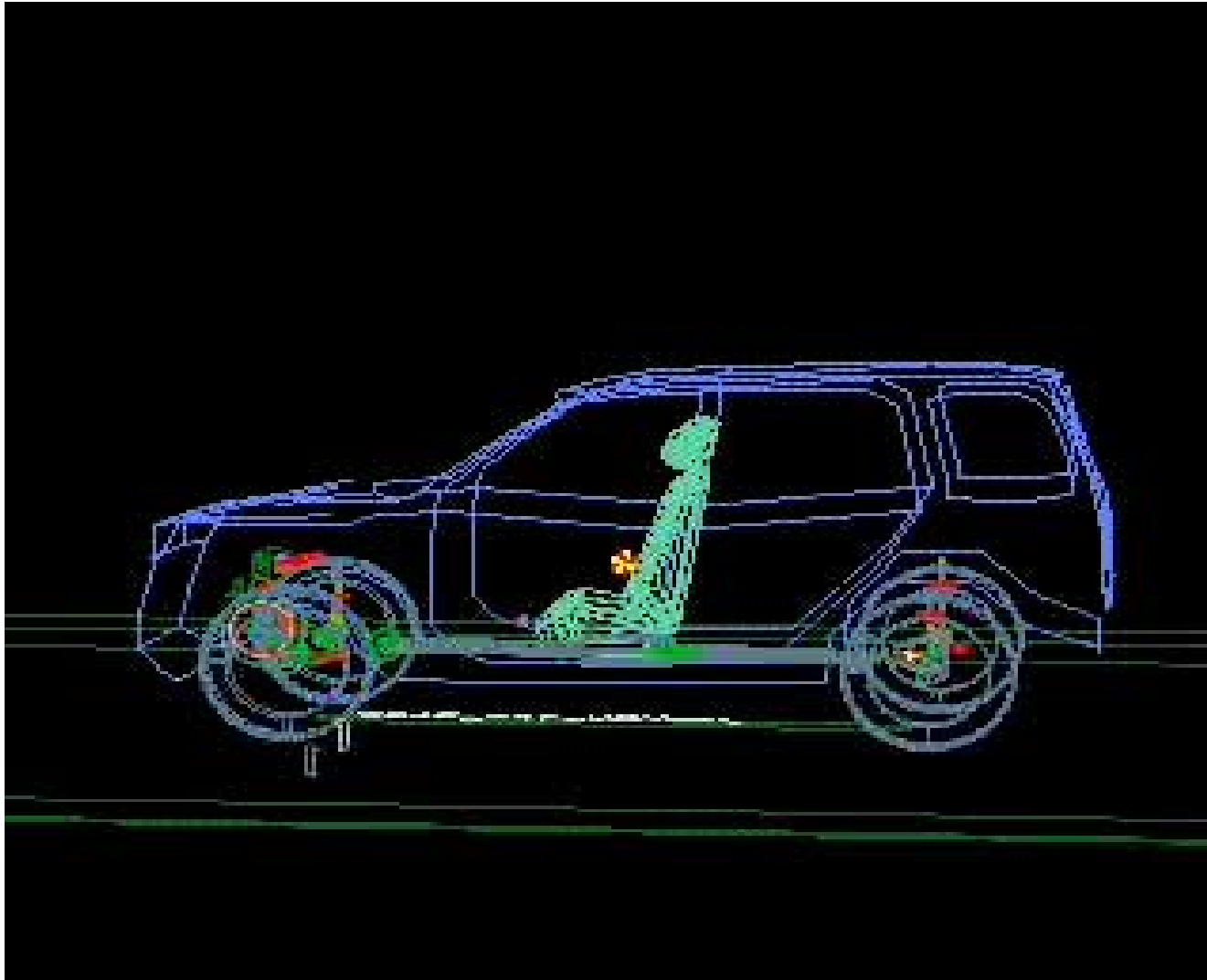


MODEL LAYOUT



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BRIDGE JUMP

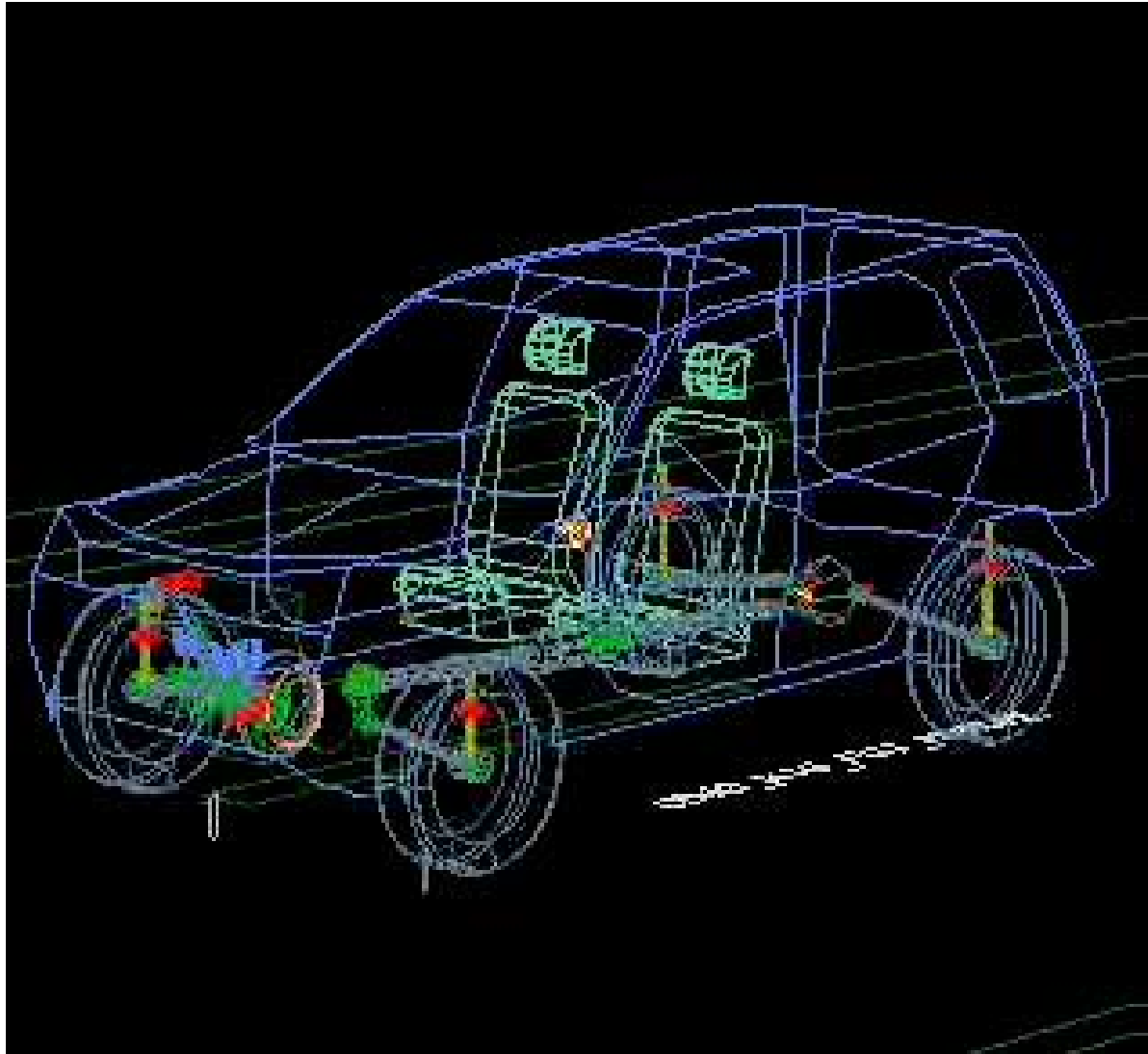


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12



IDIOT START



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FLEXIBLE BODIES

- STRAIGHTFORWARD
- FILE SIZE 1.5 Mbytes
- ACCURATE



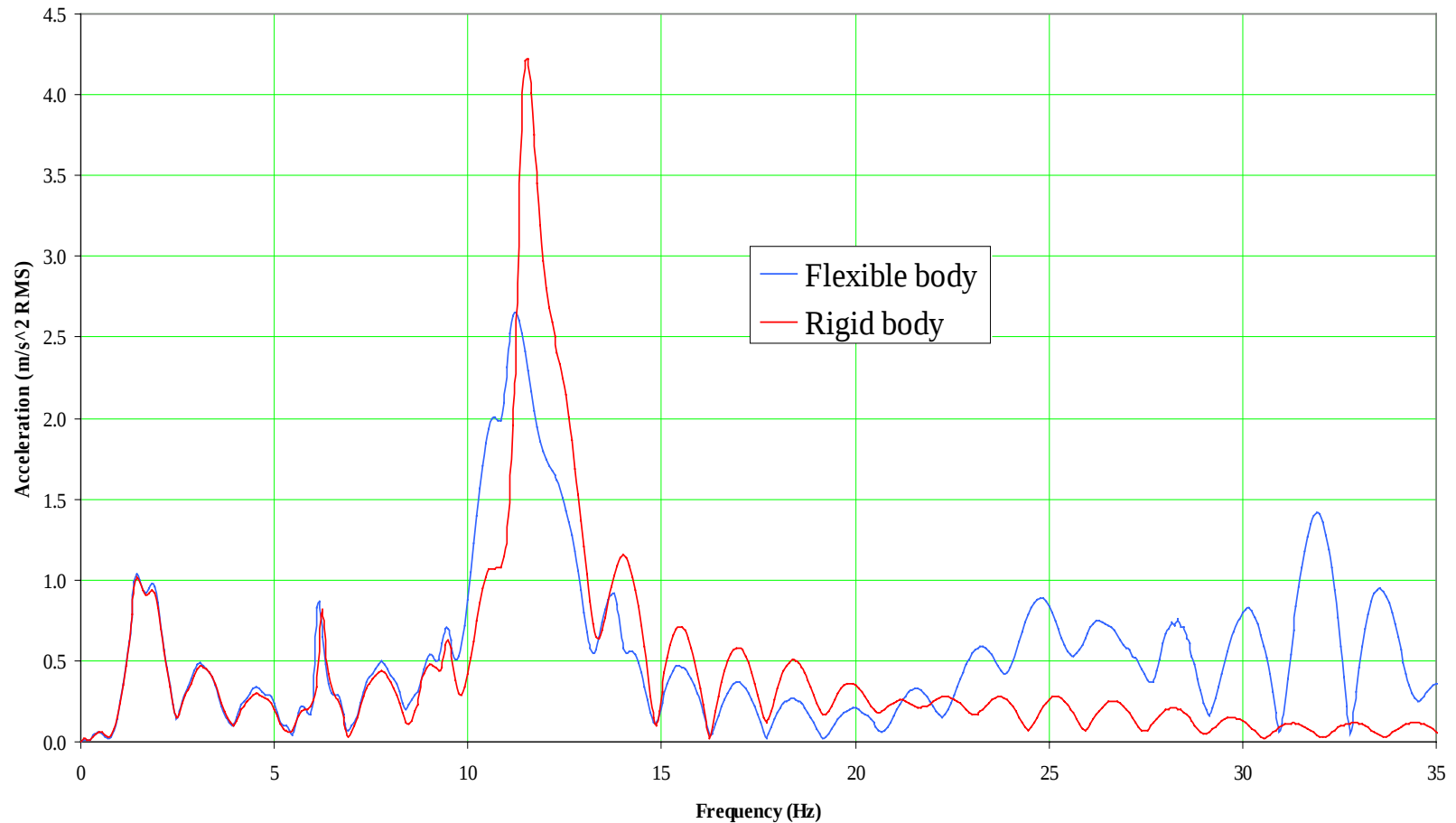
ACCURACY

EXISTING CHASSIS FRAME

	Torsion Rate	1 st Bend	1 st Torsion
	Nm/deg	(Hz)	(Hz)
Measured	2769	22	24
SIMPACK	2725	22.66	24.1
% Difference	-1.6	-3.0	0.5



RESPONSE AT LH SEAT RAIL VERTICAL TO SINGLE INPUT AT TYRE



THE FUTURE

- MODELLING ELECTRONIC CONTROL, LINKING TO SIMULINK.
- IMPROVED MODELLING OF ELASTOMERS.
- OUTPUT LOW FREQUENCY NOISE FILE TO PLAY THROUGH SPEAKERS.

