In order to develop a VPE for gearboxes: determine whether it is possible to realistically simulate gearshift feel.

**Case**

Development of a Virtual Prototyping Environment for manually operated gearboxes in passenger cars.

**Objective**

In order to develop a VPE for gearboxes: determine whether it is possible to realistically simulate gearshift feel.

**Measurement**

Measurements undertaken on the gearlever of a test vehicle using a force sensor and a motion tracker.

**Design**

Virtual Gearshift Application

Consisting of:
- haptic interface
- mock-up of the test vehicle
- software application

**Evaluation**

Evaluation objective:

Determine whether the virtual gearshift feel complies with the real gearshift feel using gearlever measurements and a questionnaire.

Evaluation results:

- Movements made and forces experienced with the Virtual Gearshift Application are similar to those made and experienced with the real gearbox.
- Similar or equal judgements on the gearshift feel.
- Participants really regarded the virtual gearbox as real: they handled it the way a real gearbox is handled and they spoke about it as if it were real.

**Conclusion**

It is possible to realistically simulate gearshift feel.

**Outlook**

1. This research: It is possible to directly link the user to the shifting behaviour of a gearbox using a VPE.
3. Finally: Reversing the process; conversion of the desired shifting behaviour into the corresponding gearbox geometry.