

# Development of a traffic perception test as a possible further driving license test component in Germany

TÜV | DEKRA arge tp 21

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# Agenda

**Preliminaries**

**Test development**

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## Preliminaries

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# Preliminaries

## Our overall goal:

The test shall contribute to a **reduction of the high accident risk** of novice drivers.



Pictures: [www.sz-online.de](http://www.sz-online.de)

**Our starting point** (see Helsinki presentations for further information)

**International examples** (by IPV): have shown, that there are many forms to implement / operationalize hazard perception assessment.

**Technical solutions** (by argetp21): allow the implementation of many of these forms.

**Empirical studies** (by UNI Saarland): have shown, higher domain specificity of the response mode (e.g. foot pedals) does not automatically lead to greater validity (UNI Saarland).

**Conclusion: We need our own theoretical rational & content selection.**

## What are typical deficits of novice drivers?

**Beginner risk:** anticipation of, perception of, reaction to hazards

**Youth risk:** self-reflection and risk-taking behavior (self overestimation, underestimation of risk)

**Analysis of accidents and their causes:** **Loss of control**, due to inadequate speed; **Rear-end collisions** due inadequate small safety margins, **Rule violations and misperceptions** at intersections

**Conclusion:** The test must refer to typical novice driver accident situations, not only to situations easy to operationalize.

## **Which competences are needed to cope with typical novice driver accident situations?**

### **Recognition of hazards / threats (explicit / implicit)**

Own actions, Actions of others (motorized / non-motorized), Moving Objects, Stationary objects, Weather conditions, Time of day

### **The appropriate choice of risk (subjective / objective)**

To minimize harm (accident, injury, illness, damage)

**Conclusion: The test should go beyond the mere recognition of hazards and assess aspects of the risk choice if possible.**

## What are the educational goals?

Within its function as a measure to steer driver training

**the test should motivate** candidates to

- **early confrontations** with critical situations
- **early practice** of hazard recognition and evaluation
  - including visual search behaviour / scanning techniques
  - including understanding of traffic (situational awareness)
- **drive anticipatory and defensive**



## Which general requirements must be met?

The test should be a component of the driving license test. Therefore, it

- must be **cost efficient**
- needs to be implemented into the **existing infrastructure**
- needs to be understandable / **acceptable to the public**
- needs to **add extra value** to the traditional practical and theoretical tests

## Integration into driver education?

These conclusions still need to be drawn concerning the tests integration into driver education:

- **Time:** At which time of the education process?
- **Scope:** How many items? How much time?
- **As an independent test component?**

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# Test development

Test mit Gelände\_Höhenmap\_an\_venp - VicomEditor 1.2.987

Datei Bearbeiten Projekt Funktionen Ansicht Extras Hilfe  
 Neu Öffnen Speichern Ausschneiden Kopieren Einfügen Hilfe  
 2D Orthogonal 3D Perspektive Fahrzeug Teilen H Teilen V Verfolgen Folgen standard Gitter Fangen Blickpunkt Navigation Früh Mittag Abend Nach  
 Trocken Nass Frost Regen Schnee Nebel Grundplatte Fahrschule 75mm 16:9 Deckel Aut. Höhe Foto Variante 00:10:17 Betrachten Objekte Dyn

Objekteigenschaften

Objekte	
Objektanzahl	393
Selektierte Objekte	1
Ausgewählte:	
Fixiert	Nein
Ein-/Ausblenden	sicht
Licht	Aus
Nebelschlusslicht	Aus
Fahrzeuginsassen	sicht
autom. Ausrichtung	Aus

Dynamik Editor

164,78 329,56 494,33 659,11 823,89 988,67

200  
150  
100  
50  
0

100 122 126,127 135

Zoom: 100 %

The screenshot displays the VicomEditor software interface. The main window shows a 3D driving simulation from a first-person perspective. A blue car with license plate '02 TL 427' is visible in the rearview mirror and ahead on the road. The environment includes green fields, trees, and hills under a clear sky. A white helmet icon is positioned in the foreground, representing the driver's view. The top of the interface features a menu bar with options like 'Datei', 'Bearbeiten', 'Projekt', 'Funktionen', 'Ansicht', 'Extras', and 'Hilfe'. Below the menu is a toolbar with various icons for navigation and editing. On the right side, there is a 'Objekteigenschaften' (Object Properties) panel with a list of objects and their attributes. At the bottom, a 'Dynamik Editor' (Dynamics Editor) window is open, showing a graph with a yellow background and a line plot. The graph has a vertical dashed line at 494.33 and data points at 100, 122, 126.127, and 135. The graph is zoomed to 100%.

## What are the basic principles to be considered?

The test content should raise the awareness of relevant **hazards and risks, categorized** according to typical accident situations.

**Simulation is excluded** because the technical requirements (of a good simulation) may not be fulfilled in the near future.

The test should consist of **two phases**:

- Phase 1: Detection of the reaction / action regarding hazard perception and risk choice (**performance measurement**)
- Phase 2: assessment of knowledge regarding hazard perception and risk choice (**measurement of understanding**)

## Which formats are suitable?

**Illustration of traffic situation** - The following formats are suitable on the basis of international experience:

- text
- photo
- video
- computer animations

Because of previous studies **computer animations** seem most appropriate.

## Which formats are suitable?

**Assessment of the reaction / action (performance measurement)** - The following formats are suitable on the basis of international experience:

- Video speed
- Gap acceptance
- Close following
- Response time
- Overtaking

We will **decide situation-specific on an empirical basis** (novice / expert comparison).

## Which formats are suitable?

**Assessment of knowledge (measurement of understanding)** - The following formats are suitable on the basis of international experience:

- Multiple choice (incl. True/False)
- Multiple response
- Ranking order (incl. comparison)
- Localisation

Based on previous considerations, the **ranking of standardized hazards** appears most suitable to us.

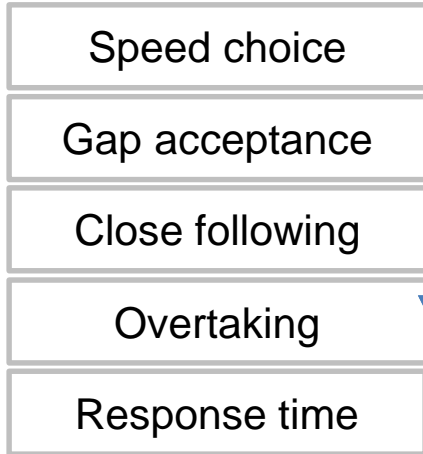


# Test development

## Illustration format



## Reaction format

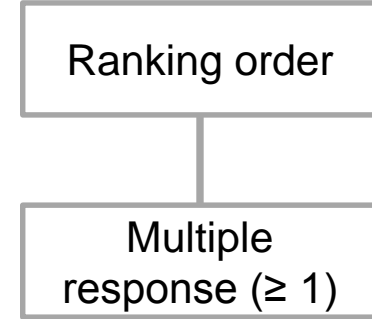


‘driving tasks’



‘measurement of situative performance’

## response format



‘measurement of situational understanding’

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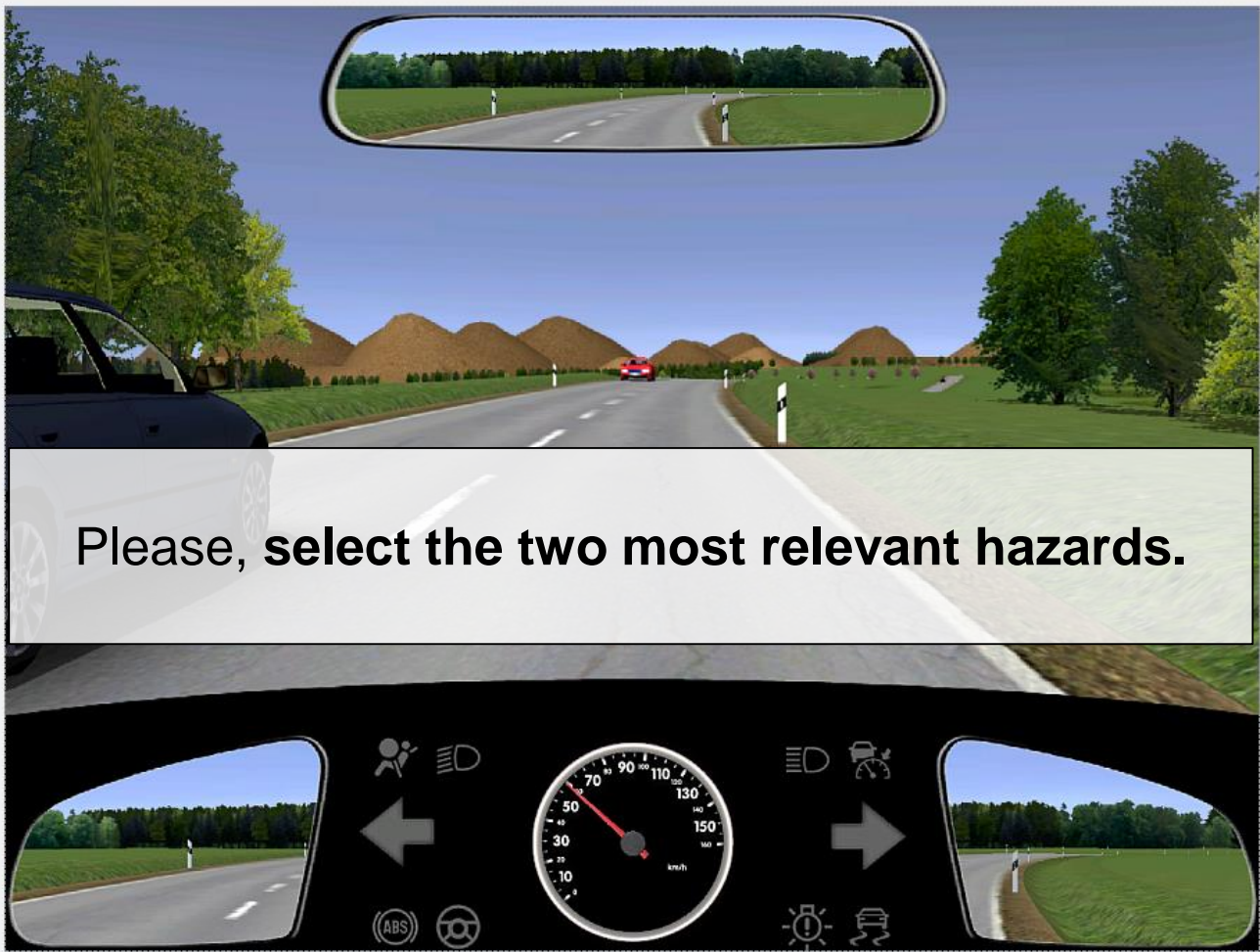
Test development

**Example**

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Please, **press the left mouse key**, when you think any by the driver action is required.



Please, select the two most relevant hazards.


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# Next Steps

## What are the next steps?

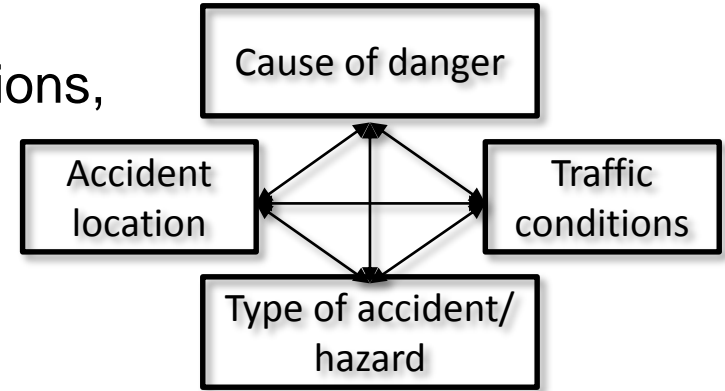
Systematic selection of **relevant traffic** situations, accident types, locations and causes

Selection of **suitable formats** of performance measurement (multiple assignment possible)

**Empirical determination** of the

- Quality (experts and novices comparison)
- Cut-off values (with respect to the performance measurement)
- Solutions (with respect to the measurement of understanding)

Establishment of the **technical and political requirements**



Thank you for your attention!

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