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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46th CIECA
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Our overall goal:

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

Pictures: www.sz-online.de

Preliminaries

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.

Preliminaries

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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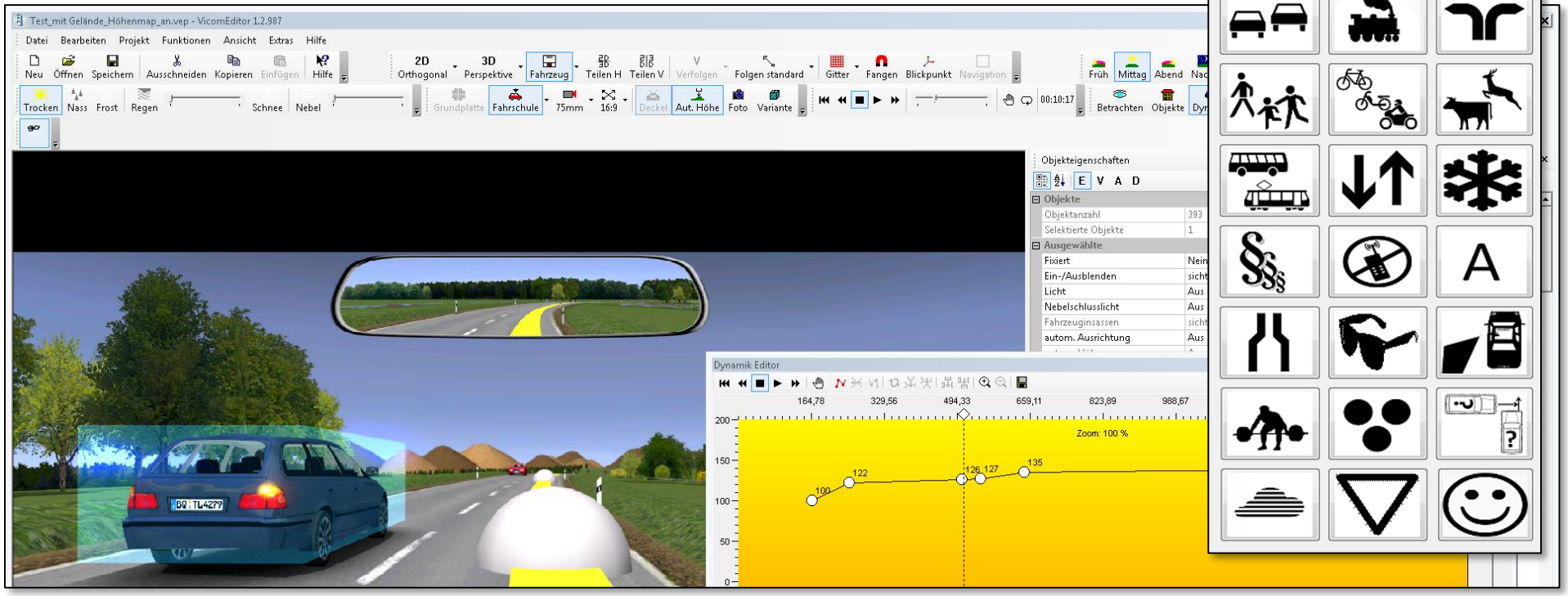

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What are the basic principles to be considered?

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

computer animation

Reaction format

- Speed choice
- Gap acceptance
- Close following
- Overtaking
- Response time

‚driving tasks‘

- mouse-click
- Hand-touch

‚measurement of situative performance‘

response format

- Ranking order
- Multiple response (≥ 1)

‚measurement of situational understanding’

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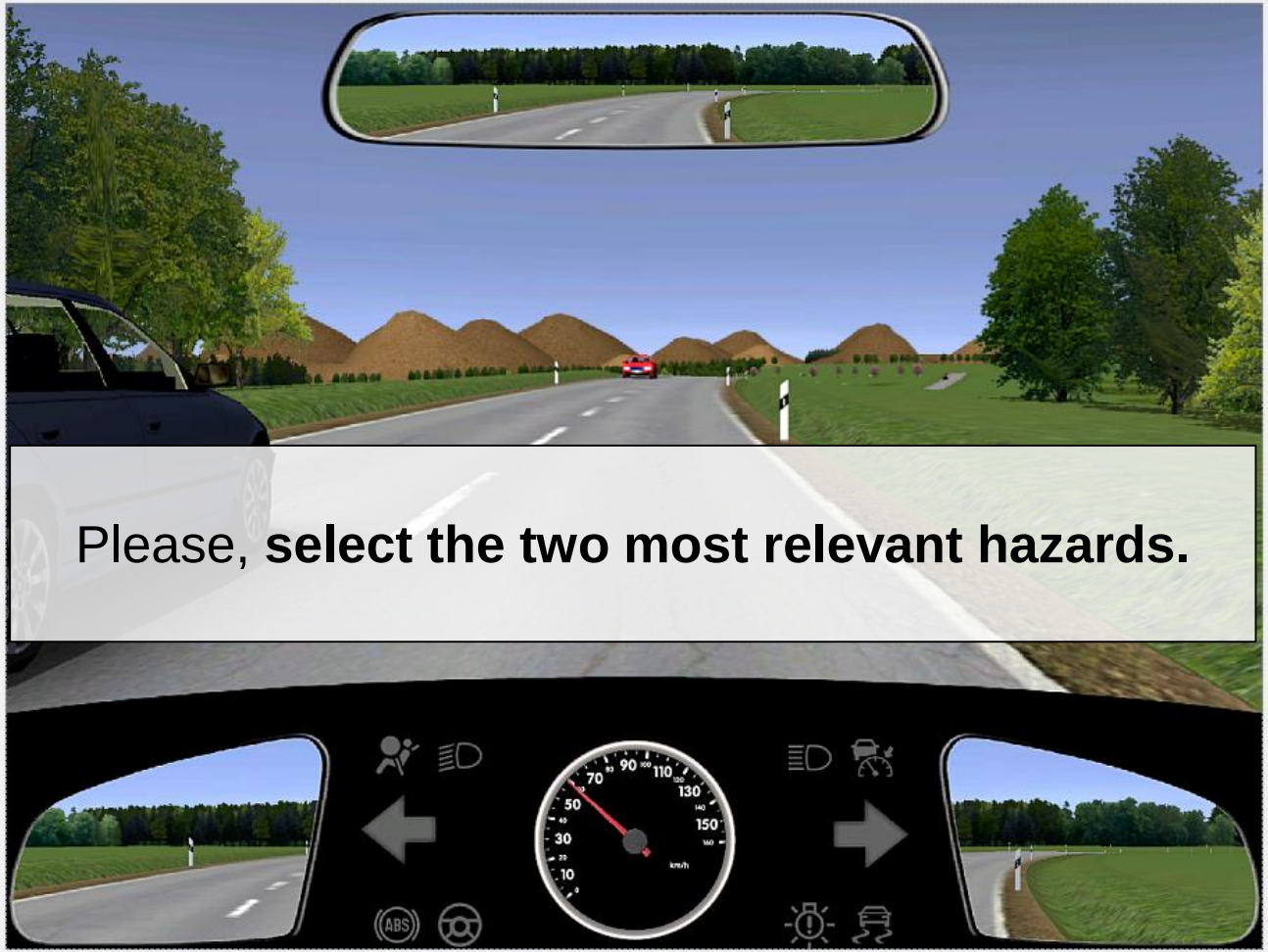
Please, **press the left mouse key**, when you think any by the driver action is required.

Prüfplatz 1 Tina Koffer



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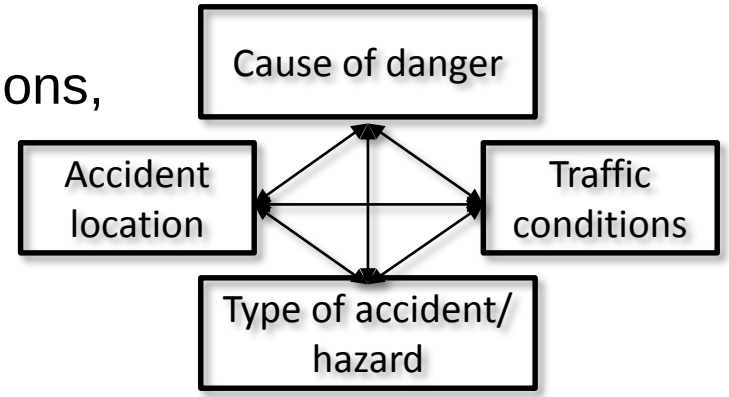
What are the next steps?

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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