

Starting an FOT: introduction to research questions, creating hypotheses and use cases

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Research Questions

Address stakeholder issues

Examples:

- Is it good for:
 - Safety
 - Environment
 - Mobility
 - Traffic efficiency
- What is the usage of the system?
- How well is it accepted?

The top-down approach: the 6 areas

The 6 areas of potential system impact on behaviour (based on Draskoczy et al., 1998)

1. Direct effects of a system on the **users and driving**
2. Indirect (behavioural adaptation) effects of the system on the user
3. Indirect (behavioural adaptation) effects of the system on the non-user (imitating effect)
4. Modification of interaction between users and non-users (including vulnerable road users)
5. Modifying accident consequences (e.g. by improving rescue, etc.)
6. Effects of combination with other systems

Levels of the driving task to consider

1. Strategic
 - a. Modifying modal choice
 - b. Modifying route choice
 - c. Modifying exposure (frequency and/or length of travel)
2. Tactical
including modifying speed choice
3. Control
including modifying speed choice

Driving tasks

1. Vehicle control
2. Following the road
3. Avoiding collisions
4. Monitoring speed
5. Rule compliance
6. Way finding

Mediating factors?

- Experience
- Attitudes
- Etc.

- Duration:
 - Short-term
 - Long-term
- Effect of system design:
 - Intended
 - Unintended

Have you covered?

1. Safety
2. Efficiency
3. Environment
4. Mobility
5. Acceptance and trust
6. Usage
7. Adoption (making inherent in behaviour)
8. Penetration



The bottom-up approach: use cases

“Target condition in which a system is expected to behave according to a specified function”

(FESTA definition)

More definitions

Situation:

A combination of certain characteristics of a use case. Situations can be derived from use cases compiling a reasonable permutation of the use cases characteristics

Scenario:

A use case in a specific situation

Event:

Something that triggers a scenario or ends one

Conclusion from FESTA workshop

- Top-down approach ensures systematic coverage of the important areas
- However, one might miss some hypotheses arising from specific Scenarios (Use Case + Situation)
- Therefore use the Use Case approach in order to derive such specific hypotheses (example: overtaking manoeuvres, interaction between systems/ functions)

Thank you for your attention!



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More information or want to cooperate?

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