



# EVALUATION OF USER ACCEPTANCE

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# What is User Acceptability -Acceptance?

- C Acceptability:** The term acceptability describes the prospective judgment of measures to be introduced in the future. Thus the target group will not have experienced any of these measures, making “acceptability” an attitude construct.
- C Acceptance** defines respondents’ attitudes including their behavioural reactions after the introduction of a measure.

Mostly Acceptability is measured before and Acceptance after the usage of C-ITS



## Main «Acceptance» questions that were formulated by the partners

- Ⓒ What information was provided, how often, over what time period, etc.?
  - Ⓒ In which way will C-ITS be relevant in the user's driving (behavior)?
  - Ⓒ Does the user understand how and when the system works?
  - Ⓒ Does the C-ITS service support the user in driving when using it? Or does it distract the user when driving?
  - Ⓒ How easy is the C-ITS service to use?
  - Ⓒ How good (reliable, understandable, timely, ...) is the information that the user receives?
  - Ⓒ How does the service respect users' integrity (privacy, etc.)?
  - Ⓒ Did C-ITS change the driving behavior (in general)?
- => How can this be measured and how to define a questionnaire?

# Building up the survey:

## C Considering contextual aspects

- ⇒ Within C-Roads, the user acceptance should mainly focus on the service provided by the C-Roads network, however user acceptance will be influenced by
  - ⇒ the provided application,
  - ⇒ HMI and services that will be given to the driver.
  - ⇒ The application can be different from demonstration project to demonstration project,
  - ⇒ or differences can occur among C-ITS service/application providers

CONTEXT  
MATTERS

# Building up the survey:

## C Frequency of measuring a priori acceptability, acceptance and appropriation

In many ITS projects, a questionnaire is held **before, during and after the trial depending on the research scope of the trial:**

- The questionnaire **before** can give more insights in the expectations, knowledge, etc. on the service and to know if/or if not, they are already in favor of using C-ITS solutions.
- The questionnaire **during trial** will be focused more on the usage and findings when using C-ITS in different scenarios.
- The questionnaire after **several weeks of use** will be focused on the misuse or abandonment of use.

## C Type of questions

- Questions on general C-ITS service
- Questions related to the specific use-cases:
  - Road work warnings
  - In Vehicle Signage
  - Other Hazardous Locations Notification
  - Traffic Light Manoeuvres & Road and Lane Topology

# Building up the survey:

## C Defining topics that are part of the survey

These main topics should be covered in the questionnaire:

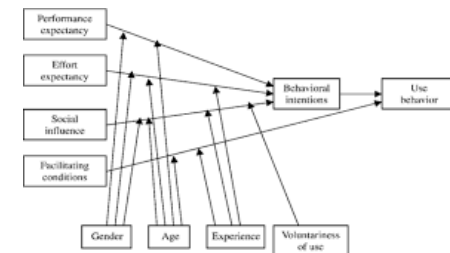
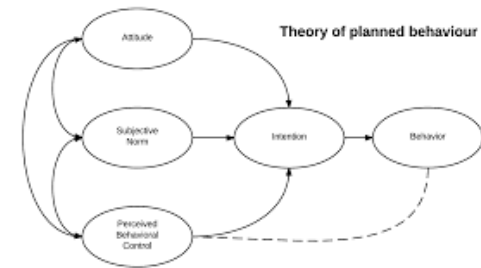
- **General (social) information**
  - Social/ID information
  - Information in relation to their driving behavior
  - Information on their knowledge/experience about technology, traffic information and C-ITS
- **General service information (and expectations)**
  - Opinions, attitudes in general on C-ITS and how they influence their acceptance
  - Specific attitudes on C-ITS services in relation to application usage
- **Use case service information**

# Building up the survey:

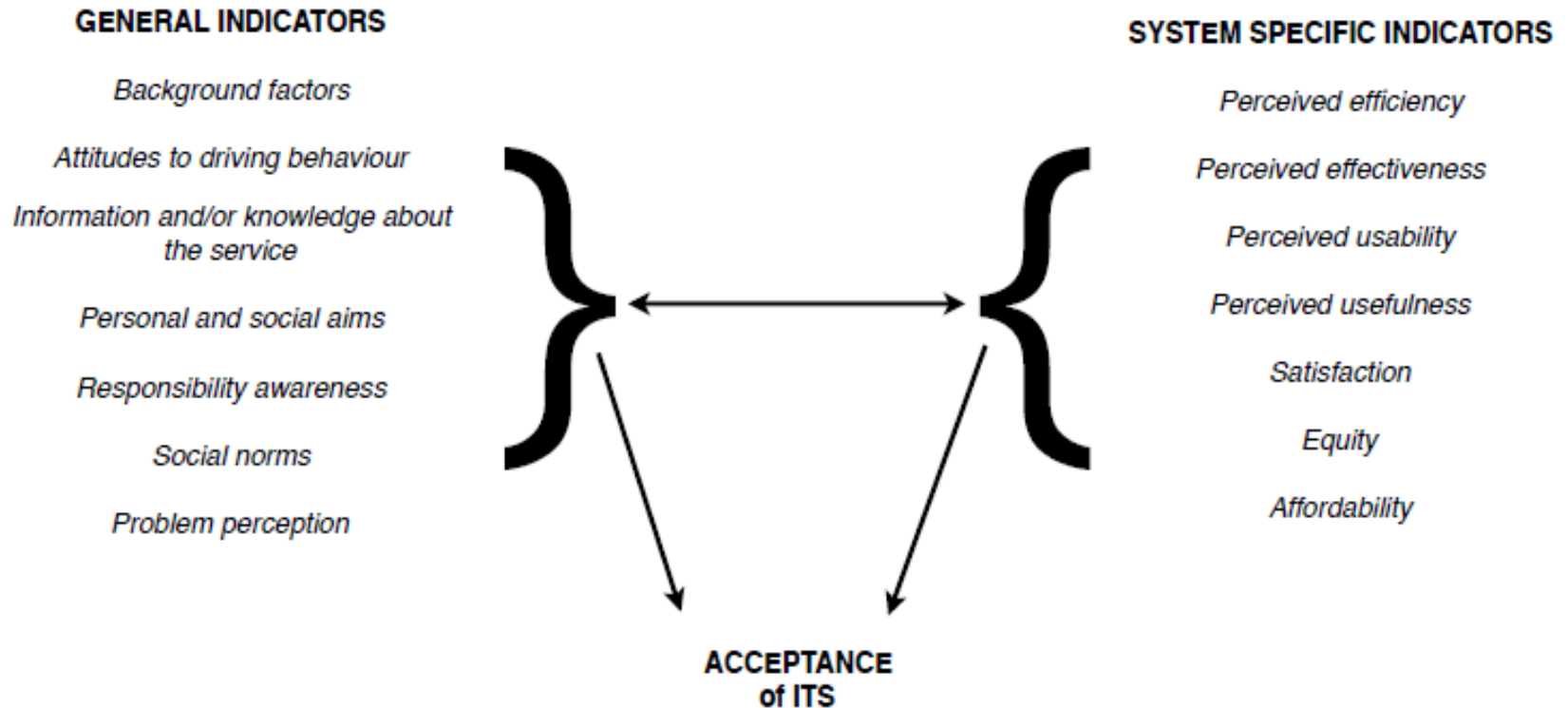
## Combining survey data with logged data

- After gathering the survey data, it is possible to combine the outcome of the user survey with the logged data, related to the impact assessment.
- Several acceptance models allow the combination or interaction of survey data on user acceptance with measured behavioral data. Most popular models are:

- Theory of planned behavior (TPB)
- Technology acceptance model (TAM)
- Unified Theory of Acceptance and Use of Technology (UTAUT).



# An overall framework





# Device specific Indicators

## **C Perceived efficiency**

**C** Perceived efficiency indicates the possible benefits users expect of a concrete measure (or device) as compared with other measures.

## **C Perceived effectiveness**

**C** Effectiveness refers to the system's functioning according to its design specifications, or in the manner it was intended to function.

## **C Perceived usability**

**C** Perceived usability is the ability to use the system successfully and with minimal effort. Usability is also an indication for how users understand how the system works.

## **C Perceived usefulness**

**C** Perceived usefulness is related to how the system supports the drivers' tasks and driving behaviour.

# Device specific Indicators

## **C Satisfaction**

- C** Satisfaction is one of two factors derived from the items within the ITS acceptance scale that Van der Laan et al. (1997) developed to study user acceptance.

## **C Equity**

- C** In general, equity refers to the distribution of costs and benefits among affected parties. However, from a psychological viewpoint, perceived justice, integrity, privacy, etc., are basic requirements for acceptability.

## **C Affordability**

- C** It may be assumed that socio-economic status will affect acceptance and acceptability, as users will consider ITS as a symbol of status, or they will want to be among the early adopters.

# What has been done in C-Roads

- Ⓒ Based on different inputs, studies, available questionnaires a long list has been provided to all the countries. Main base is the INTERCOR Survey (which is based on the above described framework)
- Ⓒ This survey can be used by the C-Roads pilots to define acceptance.
- Ⓒ Every country had to indicate:
  - Ⓒ which questions they are taking into account
  - Ⓒ Which questions they will not use
  - Ⓒ Which questions they ask and are or could be related to the provided survey

# What has been done in C-Roads

- Ⓒ Status until now:
  - Ⓒ 6 countries have provided their input
  - Ⓒ Most of them are using or will be using a subset of the questionnaire
  - Ⓒ There is an agreement to present some common results on acceptance
  - Ⓒ Some are working with professional drivers whereby acceptance could not be relevant to measure
  
- Ⓒ Next step:
  - Ⓒ Some further analysis on the different response will be made
  - Ⓒ A common survey will be provided to the countries, which they can use (if they are not making their own)
  - Ⓒ A common reporting framework will be prepared wherein results on the same topic can be presented in the final C-Roads report.



# THANK YOU!

Contact

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