Conspicuity of Powered-Two-Wheelers (PTW)

ISAL 2009

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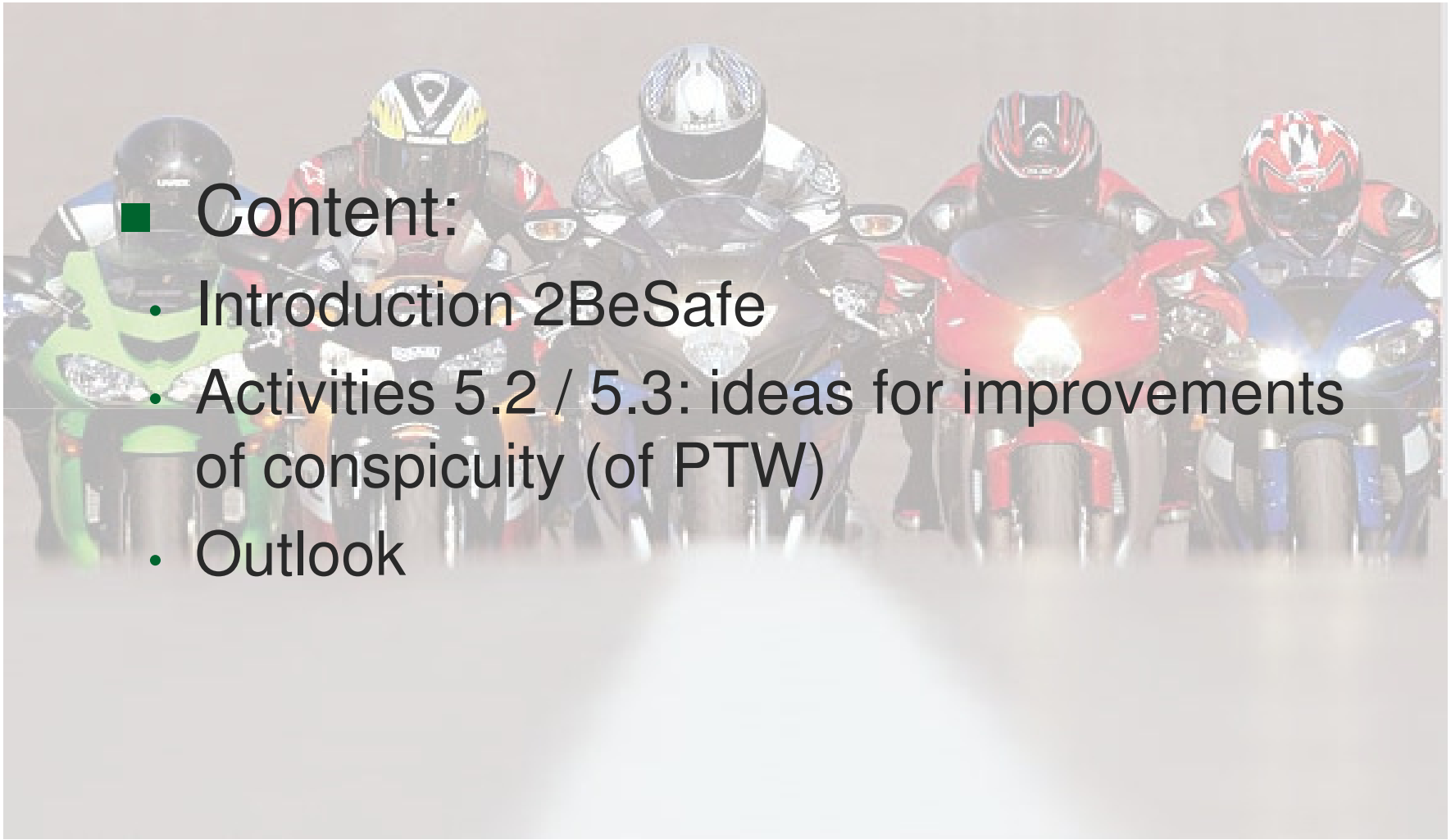
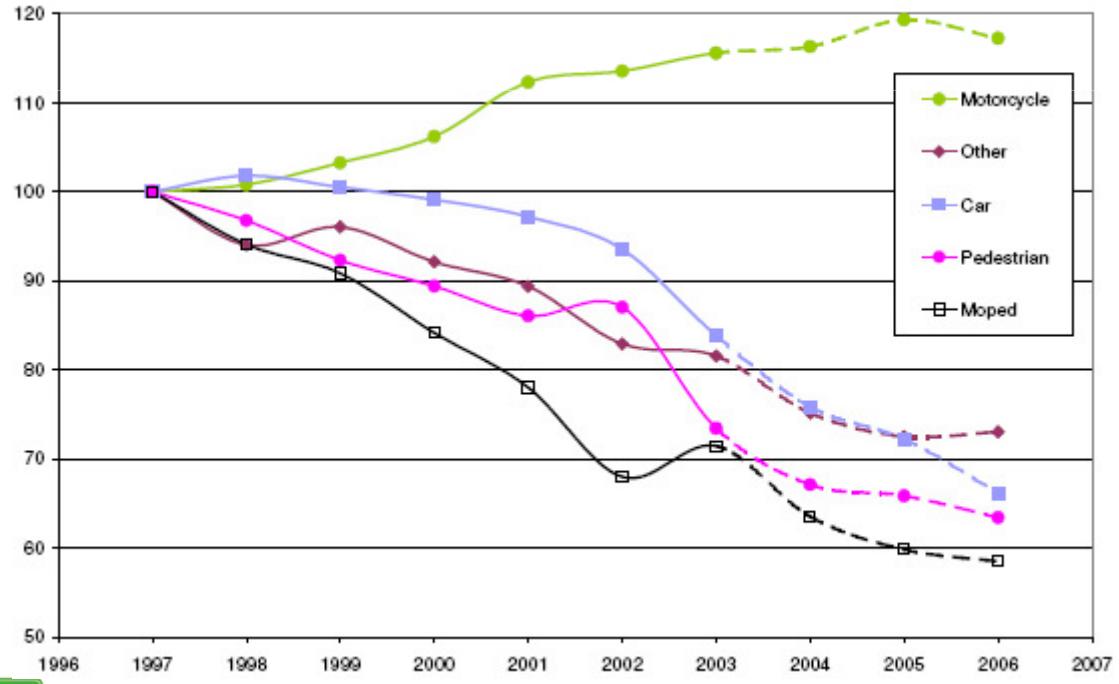
TECHNISCHE UNIVERSITÄT DRESDEN



- Content:
  - Introduction 2BeSafe
  - Activities 5.2 / 5.3: ideas for improvements of conspicuity (of PTW)
  - Outlook

2BeSafe- CONCEPT

- Accident risk for PTW (Power-Two-Wheeler) riders is about 5-25 times higher than for car drivers
- PTW deaths as a proportion of the total number of road fatalities in the European countries has increased from 11.3% to 13.4%, while the total number of road fatalities has decreased

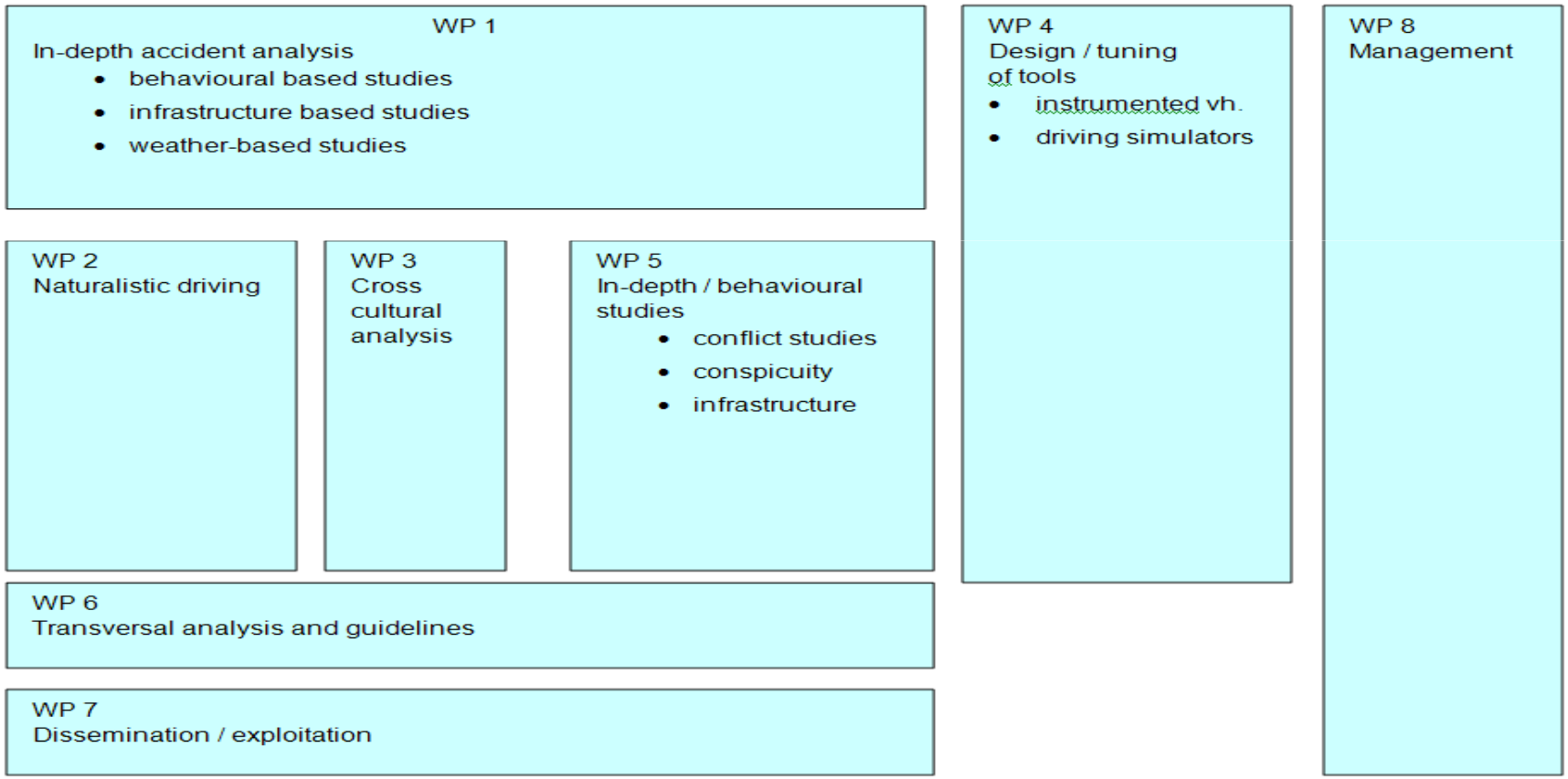


Index (1997=100) of motorcycle and moped fatalities compared with other modes EU-14, 1997-2006

Source: ERSO/ CARE Database / EC
Date of query: August 2008

2BeSafe

- **Aim:**
  Fundamental research on cause of accidents and human error and the development of practical counter-measures for enhancing PTW rider safety
- **Project Structure:**



- **Management:** ERT
- **Partners:**

INRETS
eesar CENTRE EUROPEEN D'ETUDES DE SECURITE ET D'ANALYSE DES RISQUES
KfV Kuratorium für Verkehrssicherheit
TECHNISCHE UNIVERSITÄT DRESDEN
bast Bundesanstalt für Straßenwesen
CERTH The Centre of Research and Technology Hellas
TRL
FACTUM OHG
universität wien
FLORENTINA STUDIORUM UNIVERSITAS
UNIVERSITÀ DEGLI STUDI DI MODENA E REGGIO EMILIA
FEMA Federation of European Motorcyclists' Associations
fMH FACULDADE DE MOTRICIDADE HUMANA Um Corpo de Conhecimentos
VTT
STUDII PADUANI UNIVERSITAS
THE UNIVERSITY OF NOTTINGHAM
Fundación cidaut Investigación y Desarrollo en Transporte y Energía
CENTRUM DOPRAVNÍHO VÝZKUMU
APIed
MONASH University
AIT AUSTRIAN INSTITUTE OF TECHNOLOGY
2BESAFE 2-WHEELER BEHAVIOUR AND SAFETY

Work Package 5:

- In-depth behavioural studies:
  - Activity 5.1 Conflict studies (FACTUM)
  - Activity 5.2 Visual conspicuity (TU Dresden)
  - Activity 5.3 Improvements of conspicuity (BASt)
  - [the methodological approach will be shown later in the presentation of Oliver Bartels]
  - Activity 5.4 Validation of riding simulator (UNIMORE)
  - Activity 5.5 Cognitive work analysis (INRETS)

UNIVERSITÀ DEGLI STUDI DI MODENA E REGGIO EMILIA

FACTUM OHG

TECHNISCHE UNIVERSITÄT DRESDEN

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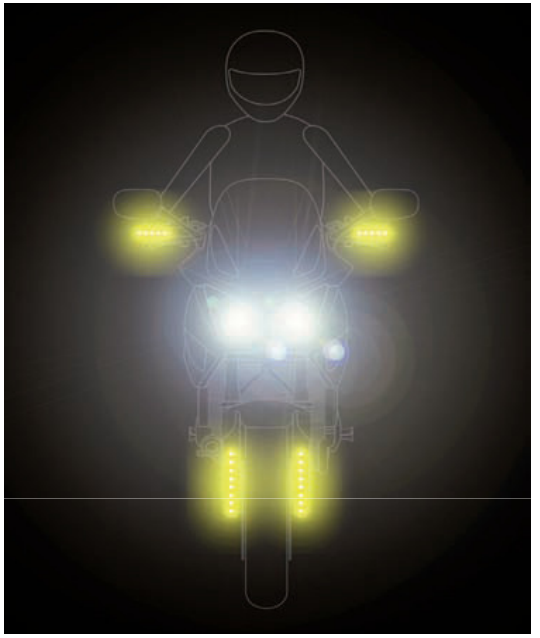
INRETS

2BESAFE 2-WHEELER BEHAVIOUR AND SAFETY

Objectives and tasks within Work Package 5.2 / 5.3:

- Effects of modifying certain PTW features on sensory and cognitive conspicuity, such as:
- motorcycle (PTW) colour
- colour of clothing and helmet
- lighting equipment on the motorcycle helmet
- new lighting configurations/ arrangements (day and night time)
- different colour
- improvement of conspicuity
- …

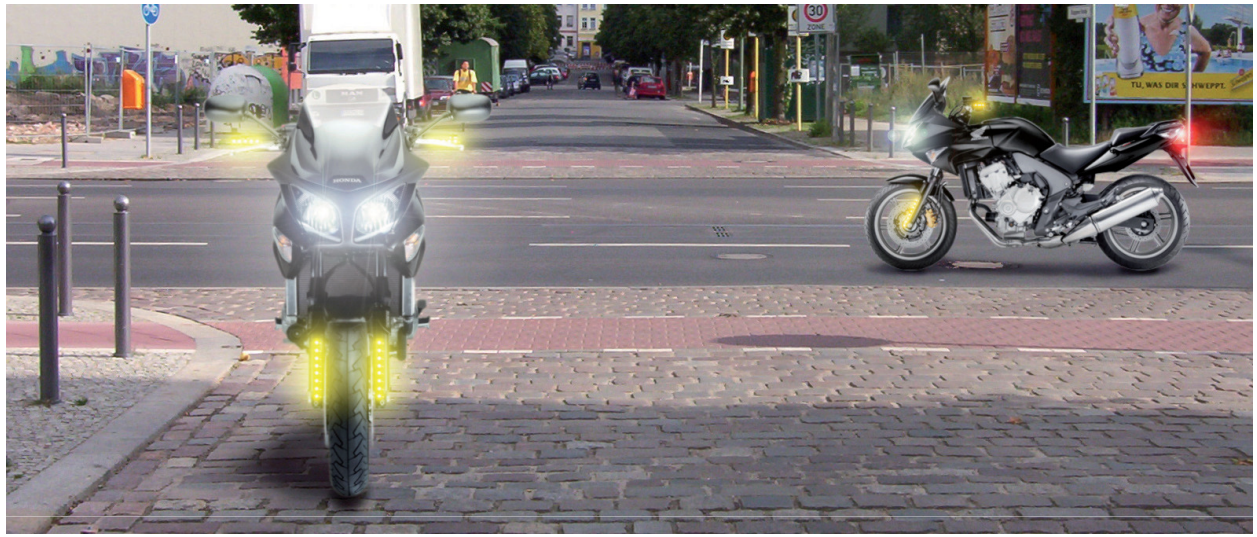


T-arrangement (Honda CBF 600):
Arrangement of light sources in one horizontal line (handlebar) and in a vertical line at the bottom of the front fork

Advantages:
Good reproduction of the motorcycle shape and size (front view); large luminous surfaces; high recognition in front and side view

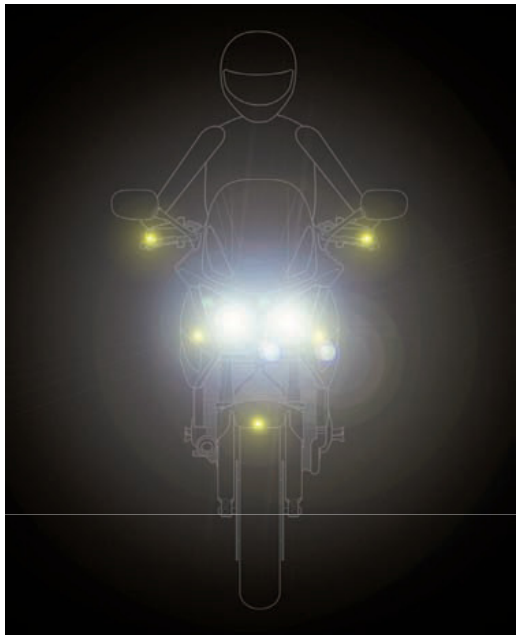
Disadvantages:
Mounting problems; especially front end with single arm front fork (scooter); no sufficient clarification of the front end in lateral view (TUD Dresden Design)

T-arrangement
(Honda CBF 600):



day and twilight/night

(TU Dresden Design)



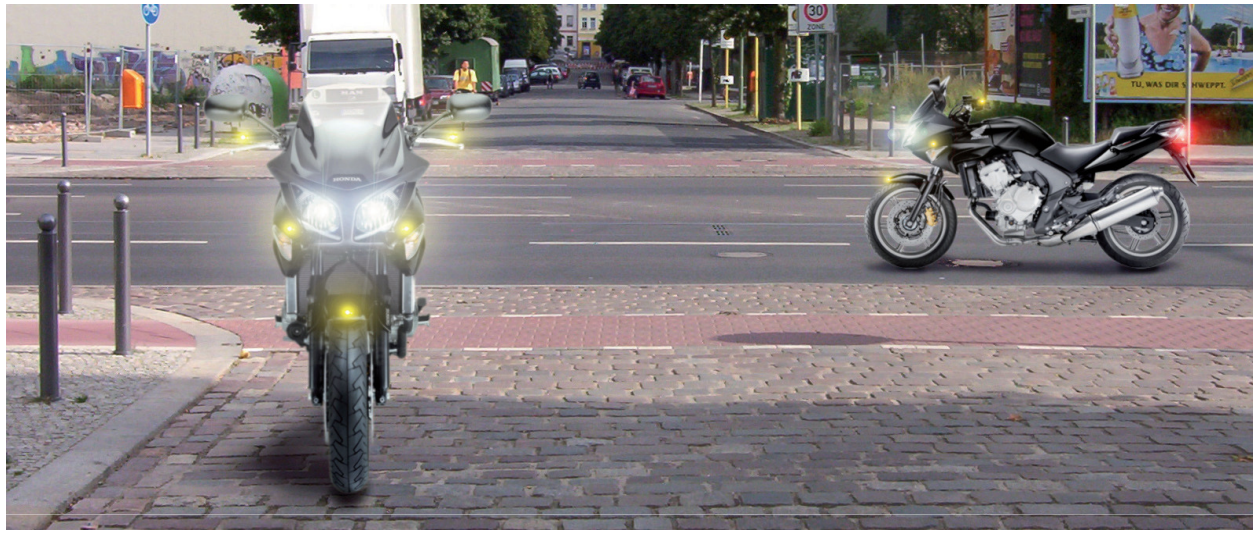
V-arrangement:
Arrangement of light sources in a open top V-arrangement; top lamps at the handlebar; lower lamps on the front fender

Advantages:
Clear form in front and side view; clarification of the anterior end in lateral view; high recognition in both views; simple arrangement

Disadvantages:
Poor visibility of the actual motorcycle size; arrangement of the medium lamps possibly to close to low beam and high beam headlamps

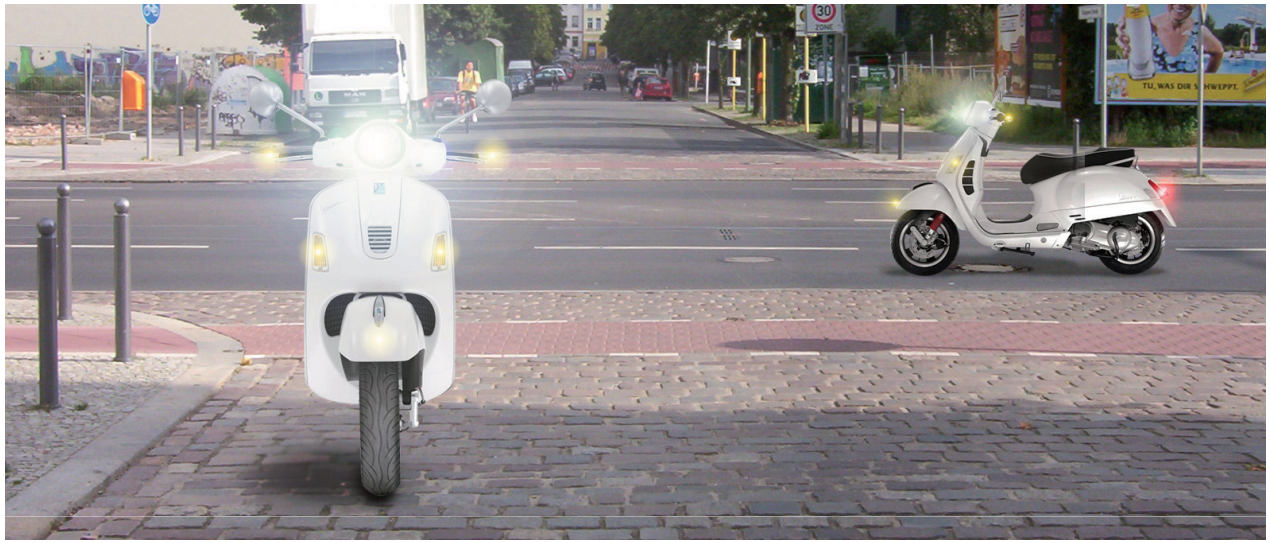
V-arrangement
(Honda CBF 600):

day and twilight/night



(TU Dresden Design)

V-arrangement (Vespa GTS 300 Super):



day and twilight/night

(TU Dresden Design)

Helmet lights are suitable to the project, but they are out of discussion in the moment due to the following disadvantages:

- Batteries or connection to the electrical system is needed
- Batteries increase the helmet weight
- Function control before each journey necessary

- Connection to the electrical system could be a source of danger in case of accidents

- Glare will occur with laterally arranged lamps (especially in rain and fog conditions)

Outlook:

T-arrangement for motorcycles ?

V-arrangement for scooters ?

Revision of the T-and V-arrangement taking into account daytime running lamps (DRL) and headlamps with gas-discharge light sources

- http://www.2besafe.eu/

Thank you for your attention