



# **PISa Final Workshop**

## ***Introduction***

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*TNO Automotive*

# *Safety of Powered Two Wheelers (PTW's)*

- 6500 PTW drivers and passengers killed on EU roads
  - 16% of all traffic fatalities (40.000) in EU
  - 39 % of all traffic fatalities in South East Asia (336.000)
  - 20 times more fatality risk per km travelled than with car
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- Safety of PTW's is one of the priorities of the EC
  - **PISa: Powered-two-wheelers Integrated Safety**



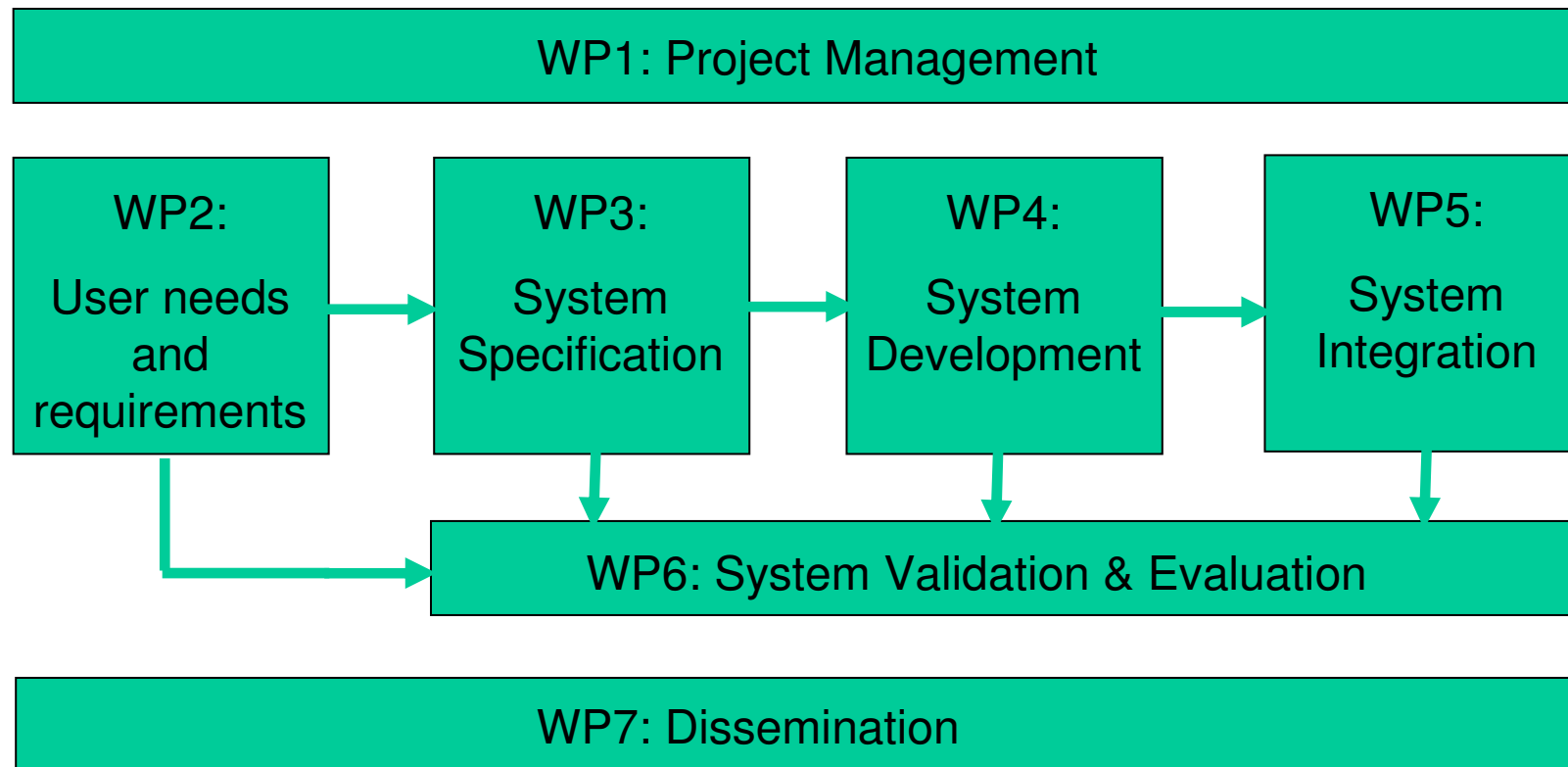
Source: ETSC ("Transport Safety Performance in EU: a Statistical Overview", 2003)



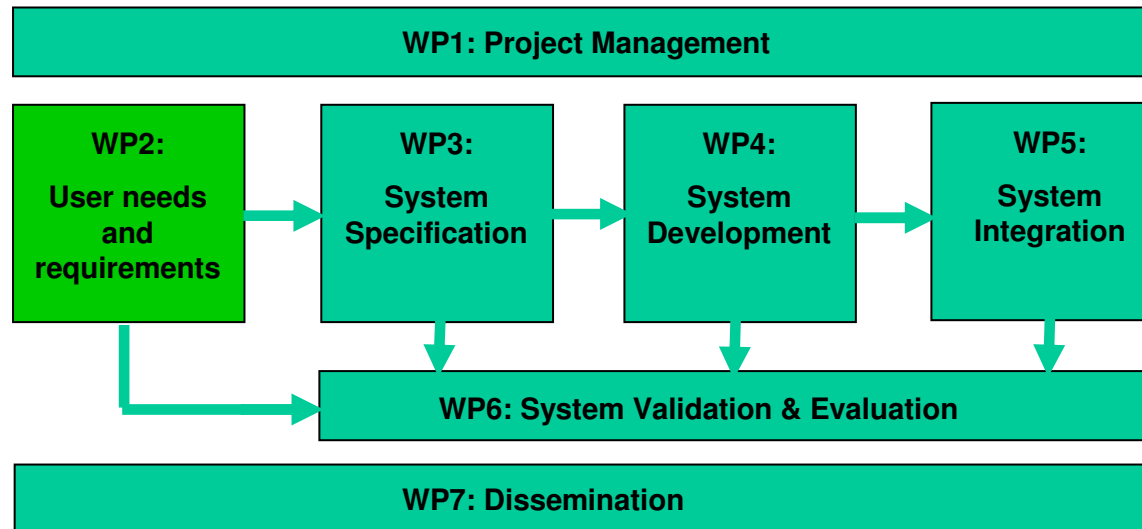
## ***PISa project aims***

- To develop and implement 'reliable and fail safe' integrated safety systems for a range of PTW's;
- These safety systems will improve performance and primary safety (handling & stability) and can link to secondary safety devices;
- The project will contribute to the EU target of 50% reduction in road accident fatalities & India's policy of enhancing the safety of PTW designs.

## *Project structure*

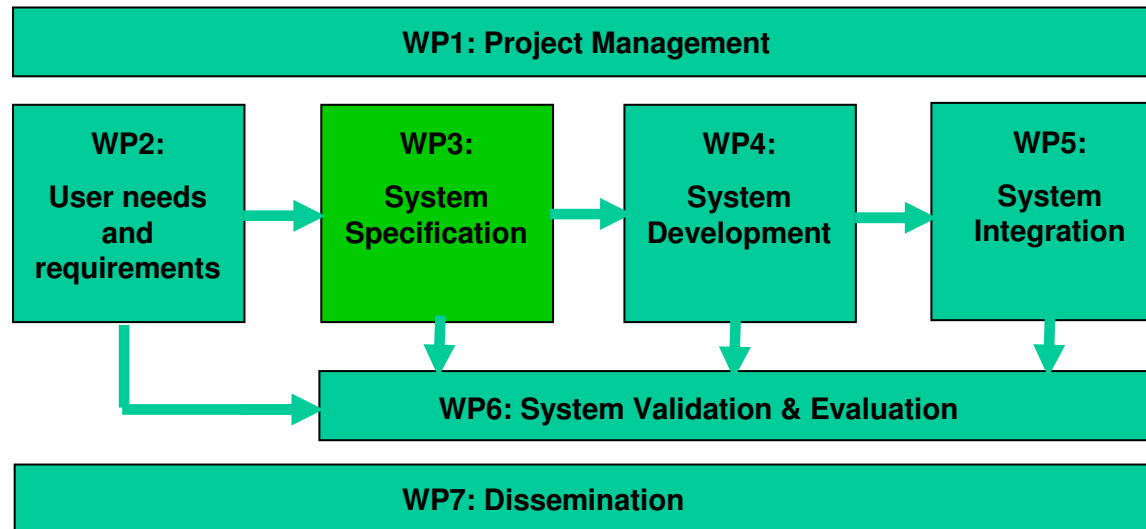


## *Project structure*



- **WP2: User needs and requirements**
  - Use of accident and user data to determine and priorities which integrated safety systems are considered likely to make a positive contribution to safety

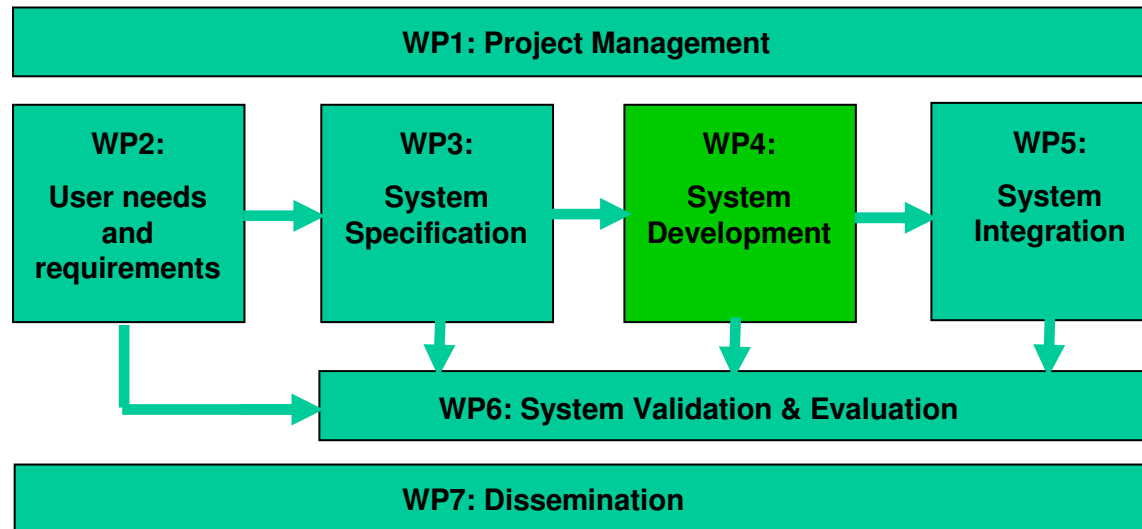
## *Project structure*



- **WP3: System Specification**

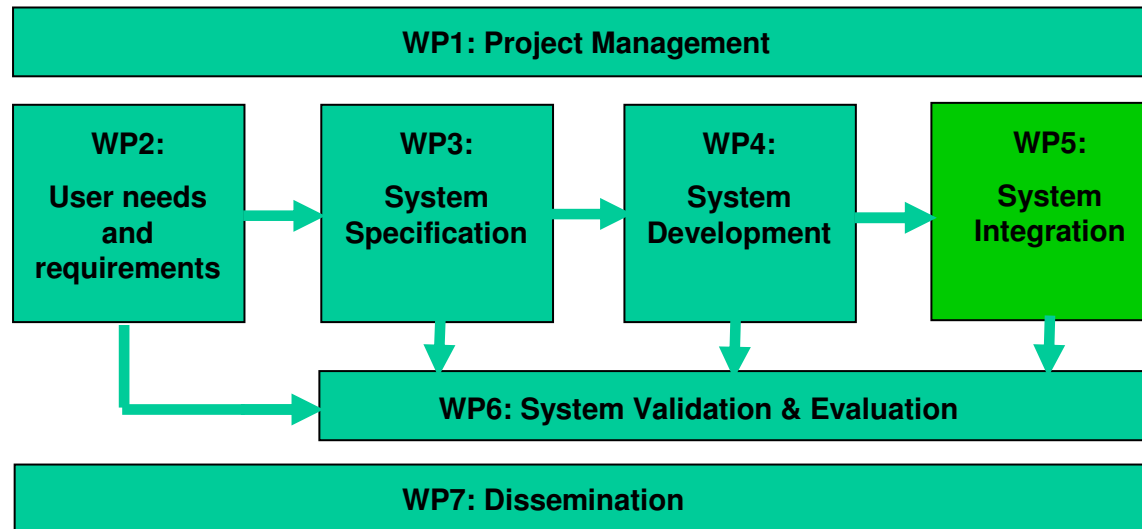
- Specification of the components which form part of the integrated safety system that detect dangerous situations and prevent potential accidents

# Project structure



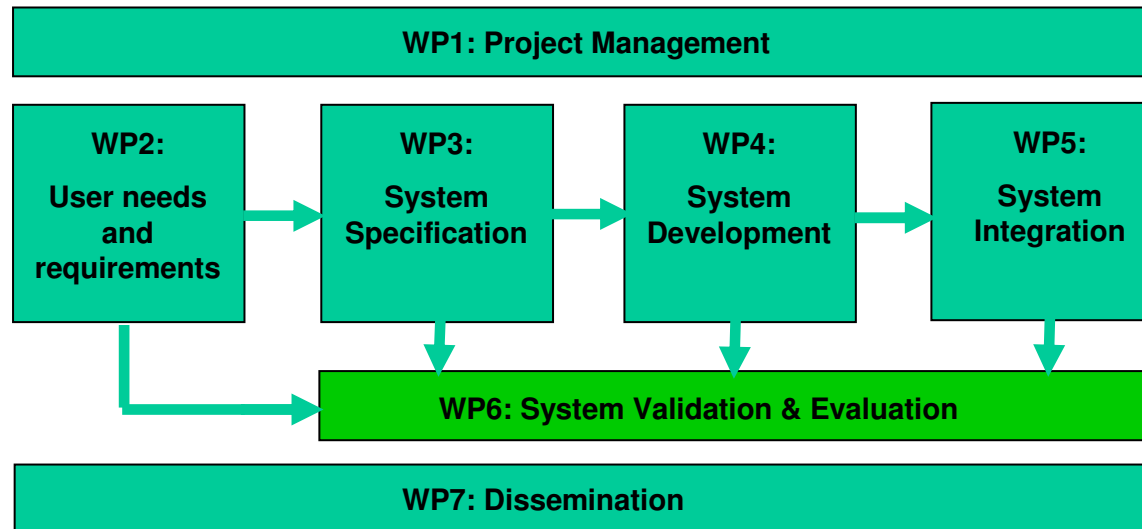
- **WP4: System Development**
  - Development of the system covering all aspects from sensors and actuators over situation interpretation, risk assessment and warning strategies up to the HMI

## *Project structure*



- **WP5: System Integration**
  - Integration of developed safety systems in two PTW's for evaluation in WP6

## *Project structure*



- **WP6: System Validation & Evaluation**
  - Validation of implemented safety system & evaluation against requirements specified in WP3



# Participants

1a	<b>TNO Science &amp; Industry</b>	NL	<i>Automotive research</i>
1b	<b>TNO Defence, Security &amp; Safety</b>	NL	<i>HF research</i>
2	<b>University of Firenze</b>	I	<i>HE, Research &amp; PTW Research</i>
3	<b>VSRC, ESRI Loughborough University</b>	UK	<i>Vehicle safety research</i>
4	<b>Ludwig-Maximilians Universität</b>	D	<i>Accident &amp; biomechanics research</i>
5	<b>TRL</b>	UK	<i>Automotive research</i>
6	<b>IBEO Automobile Sensor</b>	D	<i>Sensor systems &amp; ADAS</i>
7	<b>Paioli Meccanica</b>	I	<i>Suspension manufacturer</i>
8	<b>Malaguti</b>	I	<i>PTW manufacturer</i>
9	<b>TVS Motor Company</b>	India	<i>PTW manufacturer</i>
10	<b>Carver Engineering</b>	NL	<i>Vehicle dynamics, project development and vehicle design</i>
11	<b>Uniresearch</b>	NL	<i>Project management support</i>

11 partners from 4 EU countries and 1 partner from India