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1. Project Proposal Information

Project Proposal Title	Intelligent pedestrian crossings and advanced driver assistance systems towards enhanced safety of vulnerable road users
Project Proposal Acronym	IPC&ADAS-SVRU
Keywords	ITS, Intelligent pedestrian crossing, ADAS, safety, vulnerable road users
Abstract (Max. 2000 words)	<p>Each day the number of vehicles involved in the everyday traffic rises and as a result we have, hypothetically saying, decreased traffic safety. Unprotected and un-motorized road users suffer the most severe consequences in collisions with vehicles due to the limits of the human body's tolerance to crashes at a collision speed over 30 Km/h. Considering the fact that of all traffic fatalities in EU countries, the proportion of pedestrian fatalities is about 21% it is essential to reduce this fatalities through measures that will enhance the safety of pedestrians.</p> <p>Usually pedestrian accidents happen on pedestrian crossings due to driver or pedestrian inattention or distraction. The implementation of the proposed system will reduce this kind of accidents or in case of unavoidable accident it will reduce the severity of the consequences. It will inform/warn pedestrians and drivers about current traffic conditions increasing the level of their awareness and attention. Also it will assist the drivers to avoid or reduce the severity of accidents in normal or in pre crash situations. All these will lead towards increased overall traffic safety and decreased proportion of pedestrian fatalities. Besides this general objective, the research will focus also on the following specific objectives:</p> <ul style="list-style-type: none"> - Definition and evaluation the influence traffic/environmental parameters and parameters concerning vehicular technical characteristics which lead towards enhanced pedestrian safety. - Development of a concept of intelligent pedestrian crossing based on advanced communication technologies, that has a direct influence on the pedestrian safety. - Development of robust and low-cost interface that will in real time inform and warn pedestrians depending on the current traffic situation. - Definition of adequate protocol for V2I (vehicle to infrastructure) communication for data distribution that will improve the interaction between vehicles and infrastructure.

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	<p>- Development of advanced driver assistance system that based on information obtained from the intelligent crossings, from its own sensors and on vehicular technical characteristics will inform, warn or assist the driver in order to mitigate the accident.</p> <p>At the end of the project the above mentioned project objectives are expected to be achieved.</p> <p>The above described problem needs adequate systematic, scientific and research approach which will lead towards its solution. Also exchange of experience, transfer of the state of the art, know-how and best practices in the field of V2I communication, HMI (human machine interfaces) and ADAS (advanced driver assistance systems) with other universities, automotive industry and research organization involved in the subject field, is crucial for objectives achievement and sustainability of the project.</p>
<p>Project Description (Main Work Packages)</p>	<p>IPC&ADAS-SVRUS1: Definition of the state of the art of the subject field concerning already implemented means and measures for pedestrian protection. (M1-M3)</p> <p>IPC&ADAS-SVRUS2: Analyzes of available data concerning pedestrian fatalities (in Europe) and their ranking based on the main reasons for their occurrence. (M3-M6)</p> <p>IPC&ADAS-SVRUS3: Monitoring of real traffic situations in order to determine pedestrian and driver behavior in ordinary and specific traffic situations. Extracting information important for determining and evaluating traffic/environmental and vehicular parameters with high influence on occurrence and severity of traffic accidents, like: traffic flow, congestion, human habits both as drivers and pedestrians, terrain, weather, masses and dimensions of vehicles, dynamical characteristics of vehicles, etc. (M6-M12)</p> <p>IPC&ADAS-SVRUS4: Mathematical modeling and simulation of different traffic accident scenarios with heaviest consequences (in terms of severity and proportion). Model verification. Development of an strategy for accident mitigation and reduction of severity in unavoidable accidents. (M12-M18)</p> <p>IPC&ADAS-SVRUS5: Development of a concept of intelligent pedestrian crossing based on advanced communication technologies for data collection and distribution. Development of PCP (pedestrian crossing-pedestrian) interface that will in real time inform/warn</p>

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	<p>pedestrians depending on the current traffic situation. Development of adequate protocol for V2I communication with improved interaction between vehicles and infrastructure. (M18-M25)</p> <p>IPC&ADAS-SVRUS6: Development of advanced driver assistance system that based on information obtained from the intelligent crossings, from its own sensors and on vehicular technical characteristics will inform, warn or assist the driver in order to mitigate the accident. (M25-M33)</p> <p>IPC&ADAS-SVRUS7: Testing of the whole system on probe vehicles and pedestrian crossings. Analyses and evaluation of the relevant factors and system parameters in order to make final system tuning. (M33-M36)</p> <p>IPC&ADAS-SVRUS8: Management of the project. (M1-M36)</p> <table border="1" data-bbox="483 1014 1117 1400"> <thead> <tr> <th></th> <th></th> <th>Duration</th> <th>Start</th> <th>End</th> </tr> <tr> <th></th> <th></th> <th></th> <th>month</th> <th>month</th> </tr> </thead> <tbody> <tr> <td>WP1</td> <td>IPC&ADAS-SVRUS1</td> <td>3</td> <td>1</td> <td>3</td> </tr> <tr> <td>WP2</td> <td>IPC&ADAS-SVRUS2</td> <td>4</td> <td>3</td> <td>6</td> </tr> <tr> <td>WP3</td> <td>IPC&ADAS-SVRUS3</td> <td>7</td> <td>6</td> <td>12</td> </tr> <tr> <td>WP4</td> <td>IPC&ADAS-SVRUS4</td> <td>7</td> <td>12</td> <td>18</td> </tr> <tr> <td>WP5</td> <td>IPC&ADAS-SVRUS5</td> <td>8</td> <td>18</td> <td>25</td> </tr> <tr> <td>WP6</td> <td>IPC&ADAS-SVRUS6</td> <td>9</td> <td>25</td> <td>33</td> </tr> <tr> <td>WP7</td> <td>IPC&ADAS-SVRUS7</td> <td>4</td> <td>33</td> <td>36</td> </tr> <tr> <td>WP8</td> <td>IPC&ADAS-SVRUS8</td> <td>36</td> <td>1</td> <td>36</td> </tr> </tbody> </table>			Duration	Start	End				month	month	WP1	IPC&ADAS-SVRUS1	3	1	3	WP2	IPC&ADAS-SVRUS2	4	3	6	WP3	IPC&ADAS-SVRUS3	7	6	12	WP4	IPC&ADAS-SVRUS4	7	12	18	WP5	IPC&ADAS-SVRUS5	8	18	25	WP6	IPC&ADAS-SVRUS6	9	25	33	WP7	IPC&ADAS-SVRUS7	4	33	36	WP8	IPC&ADAS-SVRUS8	36	1	36
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<p>Current Consortium (Partners, Organisation Types)</p>	<p>Possible partners: Johnson Controls HIT- Hellenic Institute of Transport University of Stuttgart University of Belgrade</p>																																																		
<p>Deadline for Responses</p>	<p>-</p>																																																		

2. Profile of the Partners Sought

<p>Organisation Type</p>	<p>University, Automotive industry, research organization in the field of ITS</p>
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Required Skills and Expertise	Development of controllers and actuators, ICT, traffic surveillance and detection, ADAS
Role in the project	Coordinator/partner
Other Requirements	-

3. Project Proposer Information

Name of the Organisation	Ss. Cyril and Methodius University in Skopje, Faculty of Mechanical Engineering
Organisation Type	University/Faculty
Country	Macedonia
Fields of Activity	Ground vehicles, vehicle dynamics, vehicle safety, vehicle control, vehicle design and modelling, ITS, Advanced Driver Assistance Systems
Contact Person	MSc. Aleksandar Kostic
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Previous FP Projects Participated	Transbonus FP7

Please send filled in form by 25. 3. 2011 to: fg.tec@uni-mb.si