Harmonised eCall European Deployment

Scope of the I_HeERO Project-Activity 3 ecall for P2W

Matthias Mörbe
Robert Bosch GmbH

Brussels, May 15th 2018

This project is funded by the European Union

How everything started!

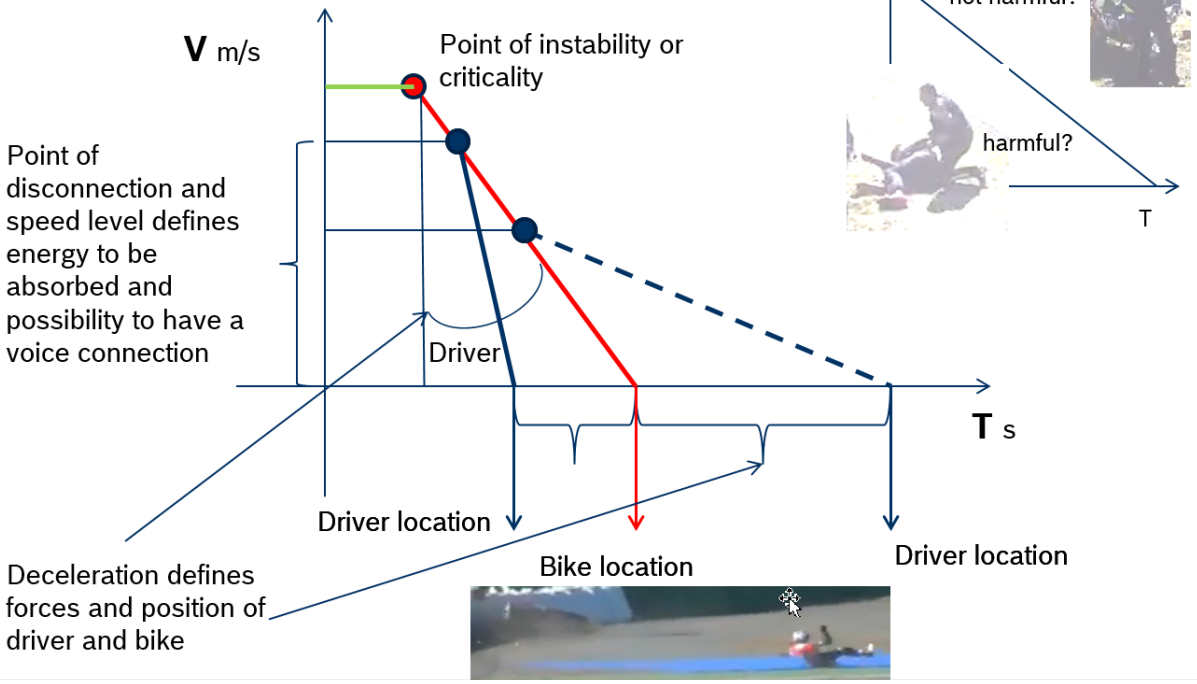
This project is funded by the European Union

HeERO 112 SOS
Harmonised eCall European Deployment

eCall for P2W at eCall-days 2014

e-call for Power Two Weehler

Baseline for e-call information



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HeERO 112 SOS
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Phase of self-discovery!

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Partners P2W Cluster

- Austria: KTM
- Belgium: HONDA, ACEM
- Bulgaria: ICOM
- Cyprus: CUT
- Germany: BMW, BOSCH*
- Greece: ICCS
- Italy: POLIMI, PIAGGIO
- Netherlands: YAMAHA
- Spain: CEIT, CETEM
- UK: CATAPULT

*Cluster lead: Matthias Mörbe, Christian Cosyns

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P2W Cluster definition phase 1/2015

IHeERO Brussels 7th January 2015

Tasks

- Definition of e-call relevant accident scenarios (will be done with WP1) -> Done
- Clarification of billing for sub contracting
  - Hennes Fischer mentioned that Andy Rooke is checking the possibility to get 100% funding for sub contracting

IHeERO Brussels 7th January 2015

Participants P2W cluster meeting #1

- José Maria Necenta (NZI Helmet)
  - Development of helmet with trigger system for eCall
  - Trigger algorithm tested in racing
  - Finding, that trigger signal from helmet is not sufficient for all accident scenarios
  - Involved in HeERO2
- Drago Bojkov (Service provider in Bulgaria)
  - Provider for telematics platform and telematic devices (also for Great Wall)
  - Joined company 10 years ago
  - Background in SW development and project management
  - Also involved in HeERO2 for retrofit devices
  - 2 years experience on wearable devices (camera on helmet with location detection, movement detection) -> possibly to detect rider separation
  - In HeERO2 developed inertial system

Car Multimedia 1

IHeERO Brussels 7th January 2015 BOSCH

- Ashweeni Beeharee (Catapult)
  - Dealing with NAD technology including sat communication
- Alfonso Brazalez (ceit)
  - Responsible for ITS & Simulation
  - Involved HeERO2 in accident detection in helmet
  - Accident detection algorithm available
  - System in evaluation in 10 racing helmets currently
  - Movement patterns but also biological data collection/ detection
- Veneta Vassileva (ACEM)
  - Safety coordinator
  - ACEM associated partner to the project to allow other contribute
  - Identified need of research for accident detection

Car Multimedia 3

IHeERO Brussels 7th January 2015

- Arne Purschwitz (BMW)
  - Specialized in active safety systems for motorcycles
- Karl-Maria Grugl (KTM)
  - 14,5 Years with KTM in R&D
  - Responsible for type approval and concept development
  - Special interest is the increment of safety for customers but also to actively involve in legislation to prepare the industry und other stakeholders in that aspects of eCall for PTW
  - Expects the basis of minimum standard of a vehicle based system as an output of this project. For any other systems the OEM wouldn't be able to carry the responsibility. Rider based or garment based systems can compliment the vehicle based systems of course.

IHeERO Brussels 7th January 2015 BOSCH

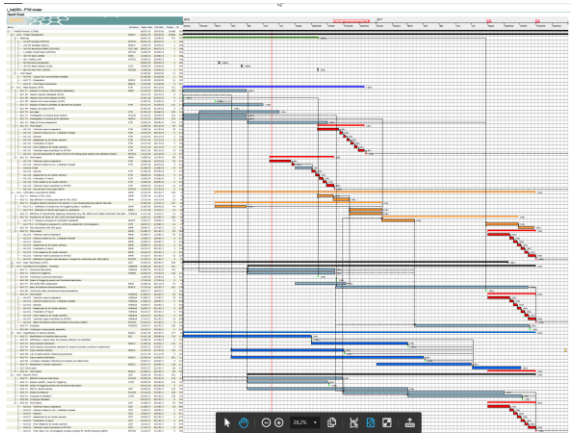
- Hennes Fischer (Yamaha)
  - Dealing with safety topics for motorcycle riders
  - Involved in ITS and eCall
  - Different stations in 20+ years with Yamaha
  - Underlines that OEM shares same opinion about the this project
- Marco Pieve (Piaggio)
  - Since Piaggio since 2001
  - Was aerospace engineer
  - Deals with regulations
  - Experiences the communication chain for motorcycle not the detection algorithm
  - Working on detection algorithm (road profile)
  - Engagement in safe rider project
- Matthias Mörbe (BOSCH) Bosch Engineering
- Christian Cosyns (BOSCH) Car multi media

Car Multimedia 5

IHeERO Brussels 7th January 2015

- Selini Hadjidimitriou (ICOOR)
  - Representing eight Italian universities
  - Involved in HeERO2 WP6
  - Contribution in study of algorithm to detect accident and for algorithm development based on mathematical models (experiences available)

Car Multimedia 6 BOSCH



Without knowing whether the project will be released or not the P2W partners started their task and structured the content.
Finally the financial process was finished with the grant agreement.

Ref. Ares(2015)6006938 - 22/12/2015

Agreement number: INEA/CEF/TRAN/A2014/1031743

CEF general model agreement: 31 July 2014

Innovation and Networks Executive Agency

Department C - Connecting Europe Facility (CEF)

GRANT AGREEMENT
UNDER THE CONNECTING EUROPE FACILITY (CEF) - TRANSPORT SECTOR

AGREEMENT No INEA/CEF/TRAN/A2014/1031743

The **Innovation and Networks Executive Agency (INEA)** ("the Agency"), under the powers delegated by the European Commission ("the Commission"), represented for the purposes of signature of this Agreement by the Director of the Agency, Dirk Beckers,

on the one part,

and

1. **Niedersächsisches Ministerium für Wirtschaft, Arbeit und Verkehr (DE)**
Friedrichswall 1
30159 Hannover
Germany

hereinafter referred to as "the coordinator", represented for the purposes of signature of this Agreement by , Michael Schäfer

and the following other beneficiaries:

2. EUROPEAN ROAD TRANSPORT TELEMATICS IMPLEMENTATION COORDINATION ORGANISATION - INTELLIGENT TRANSPORT SYSTEMS & SERVICES EUROPE (ERTICO) - established in Belgium
3. MAGNETI MARELLI S.P.A. (MM) - established in Italy
4. Automobile Club d'Italia (ACI) - established in Italy
5. Autostrada del Brennero S.p.A. (AutBren) - established in Italy
6. Beta 80 S.p.A. (Beta) - established in Italy
7. Università degli Studi di Trento (UNITN) - established in Italy
8. PIAGGIO & C. SPA (Piaggio) - established in Italy
9. Telecom Italia S.p.A. (TI) - established in Italy
10. Azienda Regionale Emergenza Urgenza (AREU) - established in Italy
11. Provincia Autonoma di Trento - Centrale Unica Emergenza (CUE) - established in Italy
12. Department of Communications, Energy and Natural Resources (IE) - established in Ireland
13. Satellite Applications Catapult (CAT) - established in United Kingdom

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Work plan P2W Cluster

				Company	Sum per task	BMW		Bosch		catapult		CEIT		Honda		ICCS		ICOM		KTM		CETEM		Piaggio		POLIMI		Yamaha	
				Logo																									
				Work capacity total	420,5 PM	18,0 PM		104,0 PM		5,5 PM		69,0 PM		15,0 PM		1,0 PM		48,0 PM		40,0 PM		19,0 PM		38,0 PM		38,0 PM		25,0 PM	
				Work capacity available		0,0 PM		0,0 PM		0,0 PM		0,0 PM		-2,0 PM		0,0 PM		0,0 PM		0,0 PM		1,5 PM		0,0 PM		0,0 PM		0,0 PM	
				Subcontracting total	1040,0 k€	190,0 k€		560,0 k€		40,0 k€		0,0 k€		0,0 k€		0,0 k€		0,0 k€		140,0 k€		10,0 k€		0,0 k€		0,0 k€		100,0 k€	
				other costs total	680,3 k€	40,0 k€		195,0 k€		11,0 k€		50,0 k€		0,0 k€		0,0 k€		12,0 k€		90,0 k€		27,3 k€		125,0 k€		17,0 k€		50,0 k€	
				Subcontracting available		-190 k€		1 k€		0 k€		0 k€		0 k€		0 k€		0 k€		0 k€		0 k€		0 k€		0 k€		-100 k€	
				# of task leader		6																							
				# of task member		23		34		14		22		17		1		12		30		20		30		17		22	
	#### - ###	######		Work capacity - planning	56,5 PM	3,0 PM		12,0 PM		0,5 PM		2,0 PM		3,0 PM		0,0 PM		0,0 PM		21,0 PM		0,0 PM		3,0 PM		8,0 PM		3,0 PM	
	Start	End	Duration	Subcontracting - planning	54 k€	54 k€		0 k€		0 k€		0 k€		0 k€		0 k€		0 k€		0 k€		0 k€		0 k€		0 k€		0 k€	
Activity 3.1 Meta-Analysis	03/15	03/16	12 Month	Task 1 - Analysis of existing P2W accident	8,1 PM	68%	1,0 PM	8%	1,5 PM	13%	0,1 PM	1%	0,0 PM	0%	1,0 PM	8%	0,0 PM	0%	0,0 PM	0%	1,5 PM	13%	0,0 PM	0%	1,0 PM	8%	1,0 PM	8%	1,0 PM	8%
	03/15	03/16	12 Month	Task 2 - Analysis of distinct parameters to	16,1 PM	134%	0,5 PM	4%	2,6 PM	22%	0,0 PM	0%	0,0 PM	0%	1,0 PM	8%	0,0 PM	0%	0,0 PM	0%	7,0 PM	58%	0,0 PM	0%	1,0 PM	8%	3,0 PM	25%	1,0 PM	8%
	03/15	03/16	12 Month	Task 3 - use cases	16,3 PM	135%	0,3 PM	2%	4,4 PM	37%	0,1 PM	1%	1,0 PM	8%	1,0 PM	8%	0,0 PM	0%	0,0 PM	0%	6,0 PM	50%	0,0 PM	0%	0,5 PM	4%	2,0 PM	17%	1,0 PM	8%
	03/15	03/16	12 Month	Task 4 - Investigation of existing e-Call sys	7,1 PM	59%	0,5 PM	4%	1,1 PM	9%	0,0 PM	0%	1,0 PM	8%	0,0 PM	0%	0,0 PM	0%	0,0 PM	0%	2,5 PM	21%	0,0 PM	0%	0,0 PM	0%	2,0 PM	17%	0,0 PM	0%
	03/15	03/16	12 Month	Task 5 - Investigation of existing e-Call sta	4,8 PM	40%	0,5 PM	4%	1,3 PM	11%	0,0 PM	0%	0,0 PM	0%	0,0 PM	0%	0,0 PM	0%	0,0 PM	0%	2,5 PM	21%	0,0 PM	0%	0,0 PM	0%	0,0 PM	0%	0,0 PM	0%
	03/15	03/16	12 Month	Task 6 - State-of-the-art assessment	4,2 PM	35%	0,3 PM	2%	1,1 PM	9%	0,3 PM	3%	0,0 PM	0%	0,0 PM	0%	0,0 PM	0%	0,0 PM	0%	1,5 PM	13%	0,0 PM	0%	0,5 PM	4%	0,0 PM	0%	0,0 PM	0%
	01/16	###	######	Work capacity - planning	75,0 PM	7,0 PM		32,0 PM		0,0 PM		2,0 PM		7,0 PM		0,0 PM		0,0 PM		6,0 PM		2,0 PM		8,0 PM		6,0 PM		5,0 PM	
	Start	End	Duration	Subcontracting - planning	176 k€	136 k€		0 k€		0 k€		0 k€		0 k€		0 k€		0 k€		0 k€		0 k€		0 k€		0 k€		40 k€	
Activity 3.2 Verification requirements	01/16	02/16	1 Month	Task 1 - Analysis of ISO 13232 verification	7,6 PM	760%	1,0 PM	###	3,6 PM	####	0,0 PM	0%	0,0 PM	0%	1,0 PM	100%	0,0 PM	0%	0,0 PM	0%	0,5 PM	50%	0,0 PM	0%	1,0 PM	100%	0,0 PM	0%	0,5 PM	50%
	02/16	03/16	1 Month	Task 2 - Gap definition of missing test sets	7,7 PM	770%	1,0 PM	###	3,7 PM	####	0,0 PM	0%	0,0 PM	0%	1,0 PM	100%	0,0 PM	0%	0,0 PM	0%	0,5 PM	50%	0,0 PM	0%	1,0 PM	100%	0,0 PM	0%	0,5 PM	50%
	03/16	05/16	2 Month	Task 3.1 - Definition of misuse and non-tri	11,0 PM	550%	1,0 PM	###	4,5 PM	####	0,0 PM	0%	0,0 PM	0%	1,0 PM	50%	0,0 PM	0%	0,0 PM	0%	0,5 PM	25%	0,5 PM	25%	1,0 PM	50%	2,0 PM	100%	0,5 PM	25%
	05/16	07/16	2 Month	Task 3.2 - Definition of vehicle test types f	12,3 PM	615%	1,0 PM	###	4,5 PM	####	0,0 PM	0%	0,0 PM	0%	1,0 PM	50%	0,0 PM	0%	0,0 PM	0%	1,0 PM	50%	0,3 PM	15%	1,5 PM	75%	2,0 PM	100%	1,0 PM	50%
	07/16	08/16	1 Month	Task 4 - Definition of requirements regardi	10,6 PM	1060%	0,5 PM	50%	4,4 PM	####	0,0 PM	0%	0,0 PM	0%	0,0 PM	0%	0,0 PM	0%	0,0 PM	0%	1,5 PM	150%	0,2 PM	20%	1,0 PM	100%	2,0 PM	200%	1,0 PM	100%
	08/16	10/16	2 Month	Task 5.1 - Prepare a proposal for verificati	11,4 PM	568%	0,8 PM	38%	6,2 PM	###	0,0 PM	0%	1,0 PM	50%	1,0 PM	50%	0,0 PM	0%	0,0 PM	0%	0,5 PM	25%	0,4 PM	20%	1,0 PM	50%	0,0 PM	0%	0,5 PM	25%
	10/16	12/16	2 Month	Task 5.2 - Prepare a proposal for conform	8,3 PM	413%	0,8 PM	38%	2,6 PM	####	0,0 PM	0%	1,0 PM	50%	1,0 PM	50%	0,0 PM	0%	0,0 PM	0%	1,0 PM	50%	0,4 PM	20%	1,0 PM	50%	0,0 PM	0%	0,5 PM	25%
	12/16	01/17	1 Month	Task 6 - First discussions with CEN group	6,2 PM	620%	1,0 PM	###	2,5 PM	####	0,0 PM	0%	0,0 PM	0%	1,0 PM	100%	0,0 PM	0%	0,0 PM	0%	0,5 PM	50%	0,2 PM	20%	0,5 PM	50%	0,0 PM	0%	0,5 PM	50%
	#### - ###	######		Work capacity - planning	37,0 PM	2,0 PM		2,0 PM		3,0 PM		13,0 PM		0,0 PM		0,0 PM		3,0 PM		3,0 PM		0,0 PM		8,0 PM		2,0 PM		1,0 PM	
	Start	End	Duration	Subcontracting - planning	0 k€	0 k€		0 k€		0 k€		0 k€		0 k€		0 k€		0 k€		0 k€		0 k€		0 k€		0 k€		0 k€	
Activity 3.3 Data Transmission	03/15	06/15	3 Month	Task 1 - Validation of the structure	5,9 PM	197%	0,5 PM	17%	0,3 PM	10%	0,1 PM	3%	1,0 PM	33%	0,0 PM	0%	0,0 PM	0%	0,0 PM	0,0 PM	1,5 PM	50%	0,0 PM	0%	1,5 PM	50%	1,0 PM	33%	0,0 PM	0%
	03/15	06/15	3 Month	Task 2 - Definition of additional parameter	9,6 PM	320%	0,5 PM	17%	0,5 PM	17%	0,1 PM	3%	4,0 PM	133%	0,0 PM	0%	0,0 PM	0%	0,5 PM	0,2 PM	1,0 PM	33%	0,0 PM	0%	1,5 PM	50%	1,0 PM	33%	0,5 PM	17%
	03/15	06/15	3 Month	Task 3 - Implementation in prototypes	10,7 PM	357%	0,5 PM	17%	0,2 PM	7%	2,0 PM	67%	3,0 PM	100%	0,0 PM	0%	0,0 PM	0%	2,5 PM	0,8 PM	0,0 PM	0%	0,0 PM	0%	2,0 PM	67%	0,0 PM	0%	0,5 PM	17%
	03/15	06/15	3 Month	Task 4 - Integration with next generation e	6,9 PM	230%	0,5 PM	17%	0,7 PM	23%	0,7 PM	23%	3,5 PM	117%	0,0 PM	0%	0,0 PM	0%	0,0 PM	0,0 PM	0,0 PM	0%	0,0 PM	0%	1,5 PM	50%	0,0 PM	0%	0,0 PM	0%
	03/15	06/15	3 Month	Task 5 - Validation with a PSAP	3,9 PM	130%	0,0 PM	0%	0,3 PM	10%	0,1 PM	3%	1,5 PM	50%	0,0 PM	0%	0,0 PM	0%	0,0 PM	0,0 PM	0,5 PM	17%	0,0 PM	0%	1,5 PM	50%	0,0 PM	0%	0,0 PM	0%

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Work plan P2W Cluster

				Company	Sum per task	BMW	Bosch	catapult	CEIT	Honda	ICCS	ICOM	KTM	CETEM	Piaggio	POLIMI	Yamaha
				Logo													
				Work capacity total	420,5 PM	18,0 PM	104,0 PM	5,5 PM	69,0 PM	15,0 PM	1,0 PM	48,0 PM	40,0 PM	19,0 PM	38,0 PM	38,0 PM	25,0 PM
				Work capacity available		0,0 PM	0,0 PM	0,0 PM	0,0 PM	-2,0 PM	0,0 PM	0,0 PM	0,0 PM	1,5 PM	0,0 PM	0,0 PM	0,0 PM
				Subcontracting total	1040,0 k€	190,0 k€	560,0 k€	40,0 k€	0,0 k€	0,0 k€	0,0 k€	0,0 k€	140,0 k€	10,0 k€	0,0 k€	0,0 k€	100,0 k€
				other costs total	680,3 k€	40,0 k€	195,0 k€	11,0 k€	50,0 k€	0,0 k€	0,0 k€	12,0 k€	90,0 k€	27,3 k€	125,0 k€	17,0 k€	50,0 k€
				Subcontracting available		-190 kl	1 kl	0 kl	0 kl	0 kl	0 kl	0 kl	0 kl	0 kl	0 kl	0 kl	-100 kl
				# of task leader		6											
				# of task member		23	34	14	22	17	1	12	30	20	30	17	22
Activity 3.4 Architecture and Validation	#### - ###	######	Work capacity - planning		108,0 PM	3,5 PM	32,0 PM	1,0 PM	3,0 PM	6,0 PM	0,0 PM	7,0 PM	3,5 PM	8,0 PM	15,0 PM	15,0 PM	14,0 PM
	Start	End	Duration	Subcontracting - planning	60 kl	0 kl	0 kl	0 kl	0 kl	0 kl	0 kl	0 kl	0 kl	0 kl	0 kl	0 kl	60 kl
	09/15	02/16	5 Month	Task 1 - Functional Description	19,2 PM 384%	0,5 PM 10%	4,0 PM 80%	0,2 PM 4%	0,5 PM 10%	1,0 PM 20%	0,0 PM 0%	0,5 PM 10%	0,5 PM 10%	2,0 PM 40%	3,0 PM 60%	3,0 PM 60%	**4,0 PM 80%**
	09/15	02/16	5 Month	Task 2 - Criteria for triggering	21,8 PM 436%	0,5 PM 10%	6,3 PM ####	0,0 PM 0%	1,0 PM 20%	**2,0 PM 40%**	0,0 PM 0%	0,5 PM 10%	0,5 PM 10%	2,0 PM 40%	3,0 PM 60%	3,0 PM 60%	3,0 PM 60%
	07/16	04/17	9 Month	Task 3 - Basic Architecture Recommenda	22,3 PM 248%	0,5 PM 6%	**4,5 PM ###**	0,3 PM 3%	1,5 PM 17%	1,0 PM 11%	0,0 PM 0%	1,0 PM 11%	1,5 PM 17%	3,0 PM 33%	3,0 PM 33%	3,0 PM 33%	3,0 PM 33%
	11/16	05/17	6 Month	Task 4 - Prototype	35,5 PM 592%	0,0 PM 0%	15,5 PM ####	0,5 PM 8%	0,0 PM 0%	1,0 PM 17%	0,0 PM 0%	4,5 PM 75%	0,0 PM 0%	1,0 PM 17%	**5,0 PM 83%**	6,0 PM 100%	2,0 PM 33%
	10/15	04/16	6 Month	Task 5 - ISO 26262 MSIL assessment	8,7 PM 145%	**1,5 PM ###**	1,7 PM 28%	0,0 PM 0%	0,0 PM 0%	1,0 PM 17%	0,0 PM 0%	0,5 PM 8%	1,0 PM 17%	0,0 PM 0%	1,0 PM 17%	0,0 PM 0%	2,0 PM 33%
Activity 3.5 Classification of Severity	#### - ###	######	Work capacity - planning		51,0 PM	2,5 PM	**20,0 PM**	0,0 PM	17,0 PM	1,0 PM	0,0 PM	0,0 PM	2,5 PM	2,0 PM	2,0 PM	0,0 PM	0,0 PM
	Start	End	Duration	Subcontracting - planning	0 kl	0 kl	0 kl	0 kl	0 kl	0 kl	0 kl	0 kl	0 kl	0 kl	0 kl	0 kl	0 kl
	01/16	03/16	2 Month	Task 1 - Identification of possible data sou	4,8 PM 240%	0,0 PM 0%	**1,5 PM ###**	0,0 PM 0%	1,5 PM 75%	0,5 PM 25%	0,0 PM 0%	0,0 PM 0%	0,5 PM 25%	0,3 PM 15%	0,5 PM 25%	0,0 PM 0%	0,0 PM 0%
	04/16	07/16	3 Month	Task 2 - Potential estimation	5,7 PM 190%	0,0 PM 0%	**3,0 PM ###**	0,0 PM 0%	1,5 PM 50%	0,5 PM 17%	0,0 PM 0%	0,0 PM 0%	0,5 PM 17%	0,2 PM 7%	0,0 PM 0%	0,0 PM 0%	0,0 PM 0%
	09/15	02/16	5 Month	Task 3 - Injury severity analysis	15,8 PM 316%	2,5 PM 50%	**7,0 PM ###**	0,0 PM 0%	3,0 PM 60%	0,0 PM 0%	0,0 PM 0%	0,0 PM 0%	0,5 PM 10%	0,3 PM 6%	0,5 PM 10%	0,0 PM 0%	0,0 PM 0%
	03/16	09/16	6 Month	Task 4 - Injury severity estimation	20,2 PM 337%	0,0 PM 0%	7,0 PM 117%	0,0 PM 0%	##### **167%**	0,0 PM 0%	0,0 PM 0%	0,0 PM 0%	0,5 PM 8%	0,2 PM 3%	0,5 PM 8%	0,0 PM 0%	0,0 PM 0%
	09/16	04/17	7 Month	Task 5 - Assessment of sensor extensions	4,5 PM 64%	0,0 PM 0%	1,5 PM 21%	0,0 PM 0%	**1,0 PM 14%**	0,0 PM 0%	0,0 PM 0%	0,0 PM 0%	0,5 PM 7%	1,0 PM 14%	0,5 PM 7%	0,0 PM 0%	0,0 PM 0%
Activity 3.6 Retrofit	#### - ###	######	Work capacity - planning		102,0 PM	0,0 PM	6,0 PM	1,0 PM	**32,0 PM**	0,0 PM	1,0 PM	38,0 PM	4,0 PM	5,5 PM	2,0 PM	7,0 PM	2,0 PM
	Start	End	Duration	Subcontracting - planning	0 kl	0 kl	0 kl	0 kl	0 kl	0 kl	0 kl	0 kl	0 kl	0 kl	0 kl	0 kl	0 kl
	03/15	06/15	3 Month	Task 1 - Retrofit functional description	10,1 PM 337%	0,0 PM 0%	1,0 PM 33%	0,1 PM 3%	2,0 PM 67%	0,0 PM 0%	0,0 PM 0%	2,0 PM 67%	1,0 PM 33%	1,0 PM 33%	0,5 PM 17%	**2,0 PM 67%**	0,5 PM 17%
	03/15	06/15	3 Month	Task 2 - Analysis specific issues for trigge	12,4 PM 413%	0,0 PM 0%	0,4 PM 13%	0,0 PM 0%	3,0 PM 100%	0,0 PM 0%	0,0 PM 0%	**4,0 PM 133%**	1,0 PM 33%	1,0 PM 33%	0,5 PM 17%	2,0 PM 67%	0,5 PM 17%
	03/15	06/15	3 Month	Task 3 - HMI for retrofit devices	11,8 PM 393%	0,0 PM 0%	0,8 PM 27%	0,0 PM 0%	**5,0 PM 167%**	0,0 PM 0%	0,0 PM 0%	2,0 PM 67%	1,0 PM 33%	1,0 PM 33%	0,5 PM 17%	1,0 PM 33%	0,5 PM 17%
	03/15	06/15	3 Month	Task 4 - Global Architecture	11,0 PM 367%	0,0 PM 0%	0,8 PM 27%	0,2 PM 7%	3,0 PM 100%	0,0 PM 0%	1,0 PM 33%	1,0 PM 33%	1,0 PM 33%	1,0 PM 33%	0,5 PM 17%	**2,0 PM 67%**	0,5 PM 17%
	03/15	06/15	3 Month	Task 5 - Prototype & Validation	52,8 PM 1760%	0,0 PM 0%	2,6 PM 87%	0,7 PM 23%	14,0 PM 467%	0,0 PM 0%	0,0 PM 0%	**28,0 PM 933%**	0,0 PM 0%	1,5 PM 50%	0,0 PM 0%	0,0 PM 0%	0,0 PM 0%

Password: I_HeERO

Distribution of planned capacity and budget task by task.

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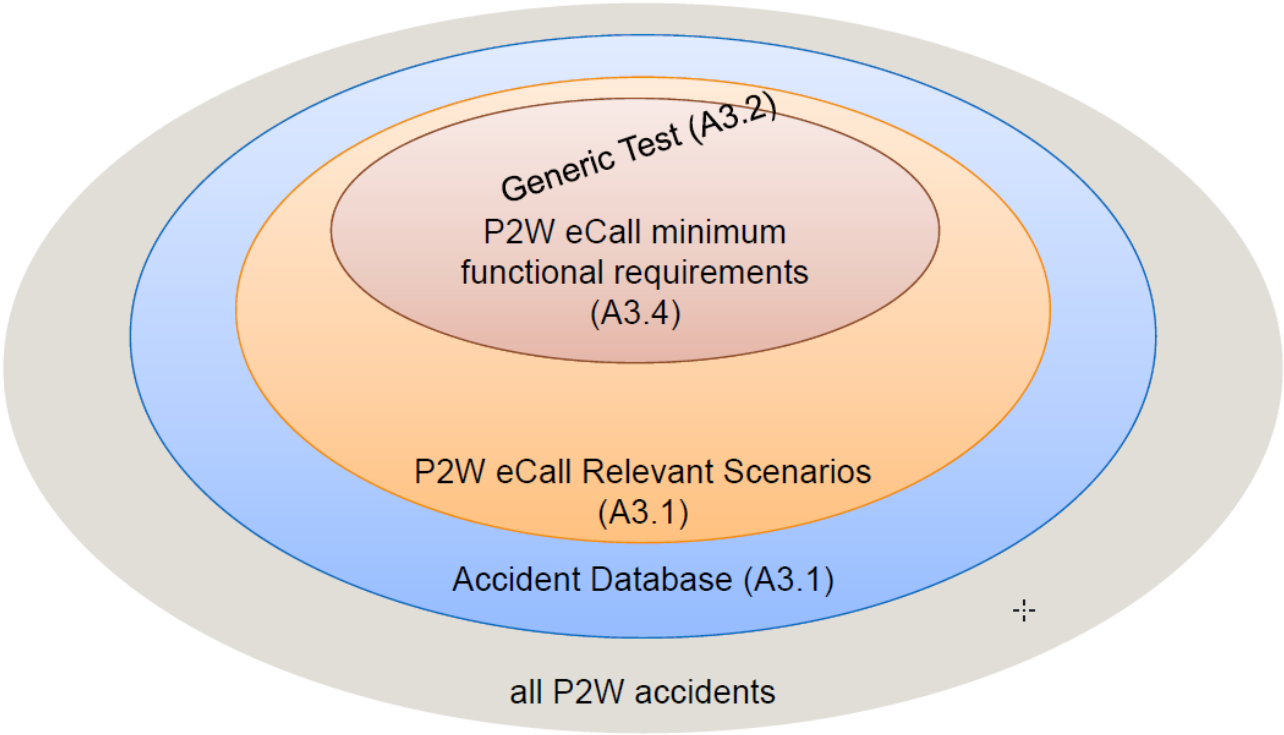
What is our core objective?

This project is funded by the European Union

Project Key Objectives

I_HeERO – PART D.
ECALL SCENARIOS AND GENERIC TESTS.



Seite 1

Source. Grant agreement draft V0.9

This project is funded by the European Union

Harmonised eCall European Deployment

Project Key Objectives

- The I_HeERO consortium is continuing the work that started in HeERO 2, which provided an initial insight into the provision of eCall for powered 2 wheelers (P2W) vehicles. I_HeERO will define the requirements and architecture of an eCall device for P2W that could be fitted at point of manufacture. …..
- …. There are significant differences between eCall for cars and eCall P2W these are:
- (i) The probable separation of driver & vehicle due to vehicle dynamic peculiarity
- (ii) Identification of a fall (with or without collision of machine with a solid object)
- (iii) The specific characteristic that a voice connection is not present or cannot be established.
- (iii) The crash dynamic of car and P2W are fundamentally different with different injury patterns and severity.
- Due to the fact that there is no clear trigger signal for a collision, such as the airbag trigger in cars, a specific triggering method will be devised for P2W within this current project. …..
- ….. An analysis of the pre- and the post-accident conditions will be used to identify the constellations and key factors that determine accident and injury severity outcomes. …
- … The resulting triggering system and statistical injury prediction method will lead to a realistic minimum of false positive and an acceptable level of false negative calls to PSAPs……
- …. One of the core objectives is to ensure a minimum of system complexity. This will be necessary to ensure positive market acceptance and quick uptake.

Source. Grant agreement draft V0.9

This project is funded by the European Union

Deliverables & Sub activity lead

- Deliverable 3.1 Lead: KTM

  List and assessment of state of the art of existing eCall systems and standards including an assessment of the relevance to P2W vehicles

  List /set of use cases for P2W eCall

- Deliverable 3.2 Lead: BMW

  Documented proposal for a verification standard

- Deliverable 3.3 Lead: CEIT

  MSD table for P2W for PSAP's

- Deliverable 3.4 Lead: YAMAHA

  Basic architecture recommendation document

- Deliverable 3.5 Lead: BOSCH

  Documented analysis of possible determination of injury severity

- Deliverable 3.6 Lead: CEIT

  State of the art definition of a prototype

  Homologation process proposal for retrofit solutions

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Let’s go into the sub-activities and see the details!

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HeERO 112 SOS
Harmonised eCall European Deployment

HeERO 112

Harmonised eCall European Deployment

A3.1 Meta-Analysis eCall state of the art

Overview and Results

20.10.2017

71263 Renningen

Robert-Bosch Campus 1

Author:
- K.-M. Grugl, F. Harnischmache

Version:
- 1.0, 20.10.2017

This project is funded by the European Union

3.1 Meta-Analysis

- Activity lead: KTM

Task 1 - Analysis of existing P2W accident database(s)

Task 2 - Analysis of distinct parameters to describe accidents

Task 3 - Use cases

Task 4 - Investigation of existing e-Call systems

Task 5 - Investigation of existing e-Call standards

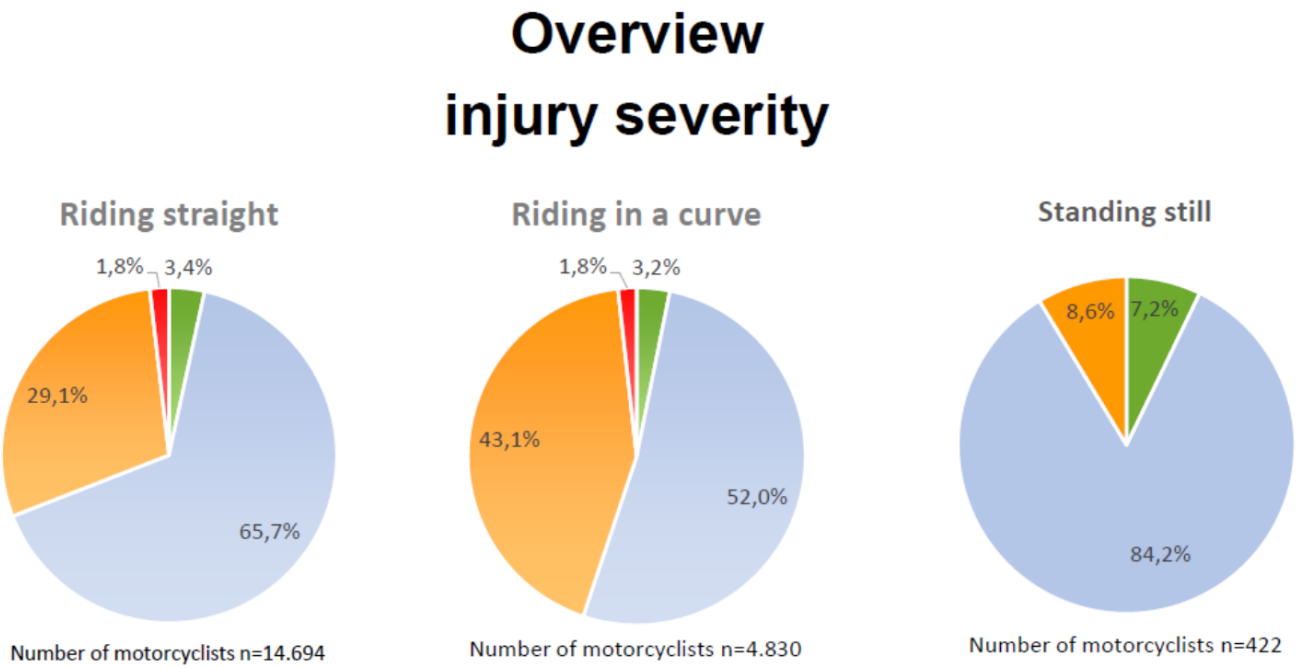
Task 6 - State-of-the-art assessment

This project is funded by the European Union

Task 1 - Analysis of existing P2W accident database(s)

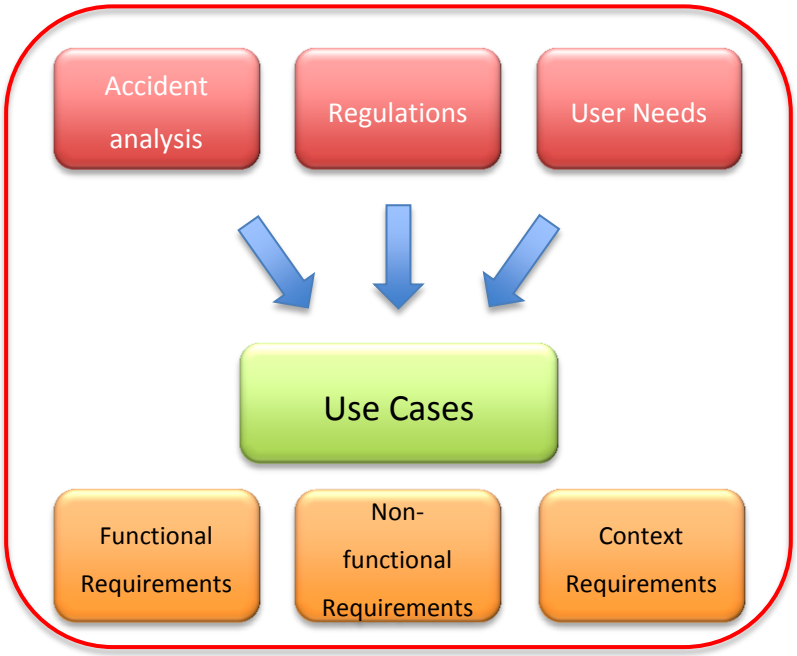
Database: **GIDAS** – **G**erman **I**n-**D**epth **A**ccident **S**tudy

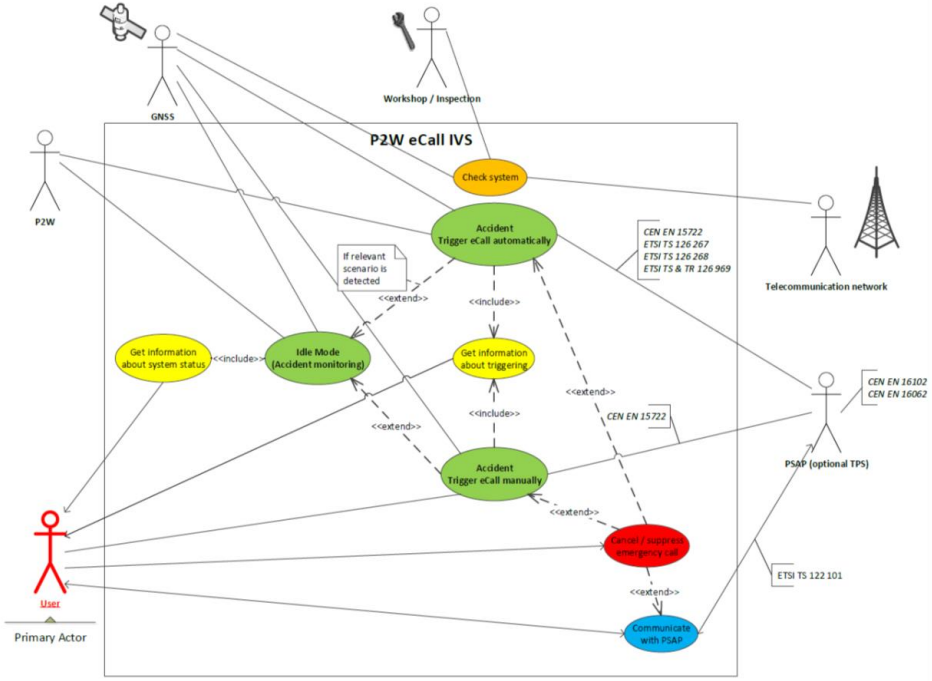
Analyzed by: **VUFO** - **V**erkehrs**u**nfall**fo**rschung an der TU Dresden GmbH



This project is funded by the European Union

Sub-activity 3.1- Meta Analysis Use Cases





A “Use Case” (UC) describes the behaviour of the system from the point of view of a user. The primary target of a “Use Case” is to satisfy a user’s goal. **So the important thing is, “what” the user expects and not “how” this is reached.**

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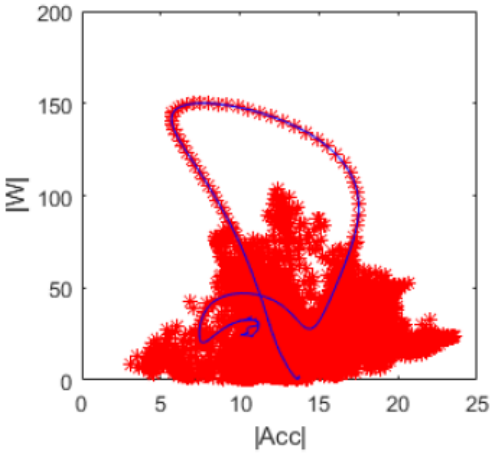
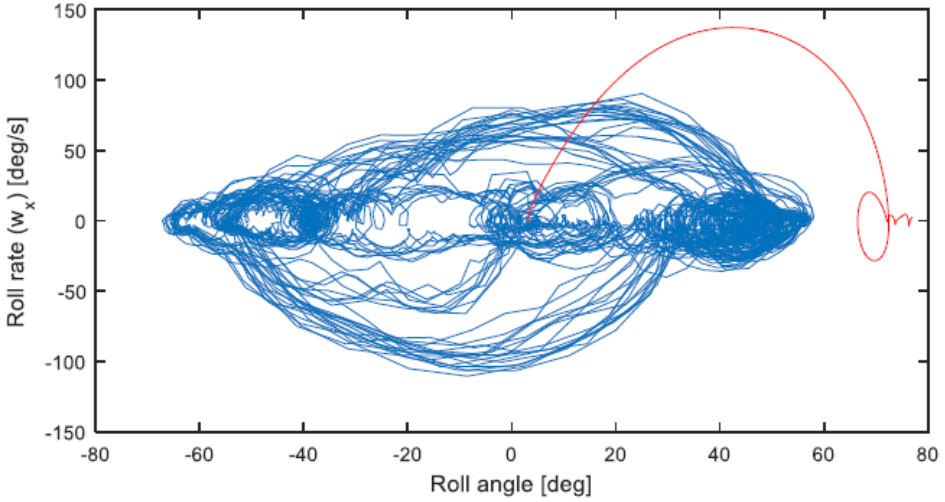
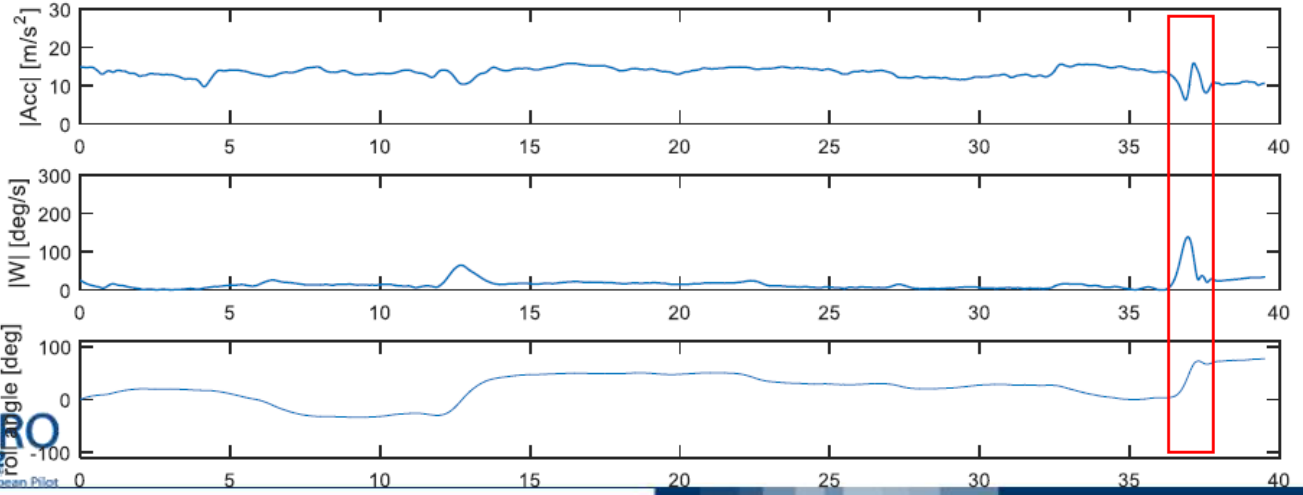
HeERO 112 SOS
Harmonised eCall European Deployment

Fall down 1- combined analysis





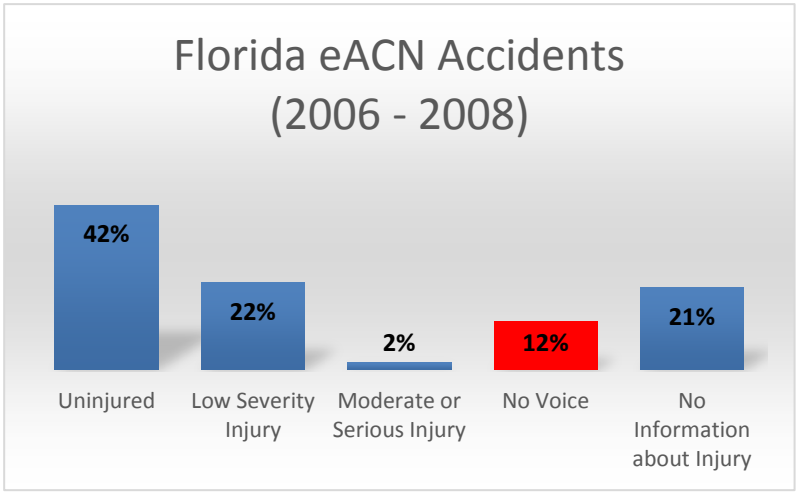


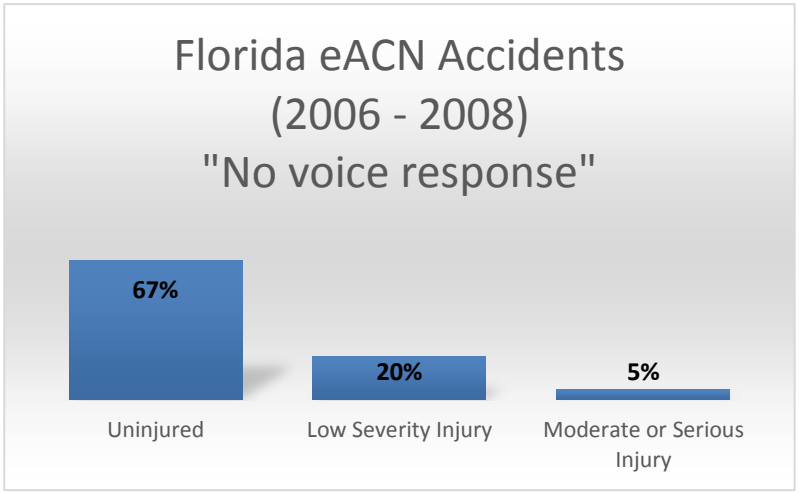
This project is funded by the European Union

HeERO 112 Harmonised eCall European Deployment

Task 6 - State-of-the-art assessment

- Injury self-evaluation





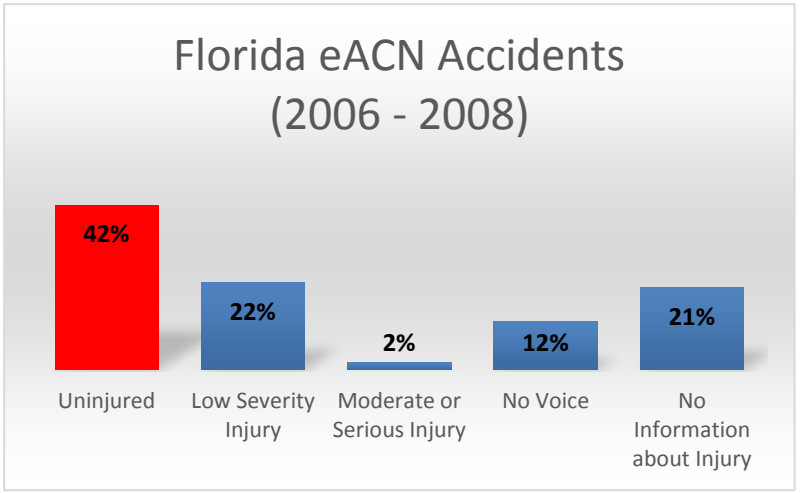
(eACN: enhanced Automatic Collision Notification System)

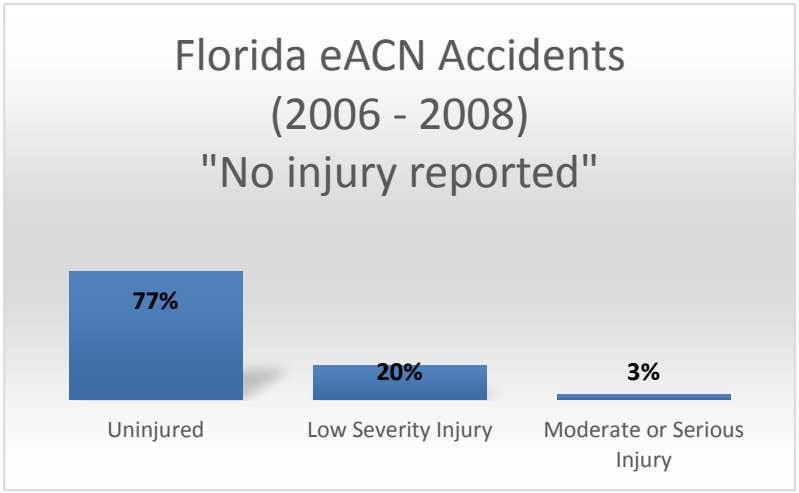
S. Rauscher, G. Messner, P. Baur, J. Augenstein, K. Digges, E. Perdeck, G. Bahouth and O. Pieske,
"ENHANCED AUTOMATIC COLLISION NOTIFICATION SYSTEM – IMPROVED RESCUE CARE DUE TO INJURY PREDICTION – FIRST FIELD EXPERIENCE,"
Paper Number: 09-0049, 2009.

This project is funded by the European Union

Task 6 - State-of-the-art assessment

- Injury self-evaluation





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"ENHANCED AUTOMATIC COLLISION NOTIFICATION SYSTEM – IMPROVED RESCUE CARE DUE TO INJURY PREDICTION – FIRST FIELD EXPERIENCE,"
Paper Number: 09-0049, 2009.

This project is funded by the European Union

HeERO 112

Harmonised eCall European Deployment

A3.2 Verification requirements

Overview and Results

20.10.2017

71263 Renningen

Robert-Bosch Campus 1

Author:

- Arnd Dippel, BMW
- Marc Torlo, BMW

Version:

- 1.0, 20171020

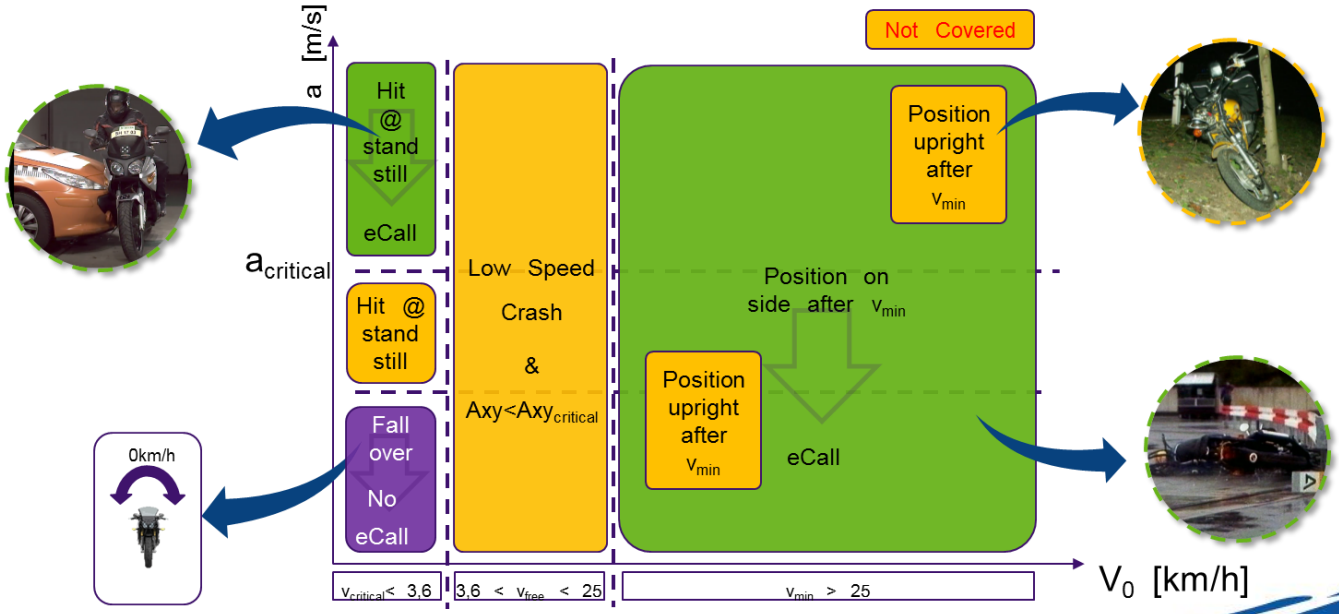
This project is funded by the European Union

A3.2 T5 – Proposal for an verification standard

Triggering criteria (results of Activity 3.4)

1. An **eCall shall be activated** when the **vehicle falling down is detected** and the **accident speed exceeds 25km/h**

2. An **eCall shall be activated** when the P2W **in a zero-speed condition** experiences a **significantly high and long acceleration** on the xy-plane (namely it is hit by another vehicle)

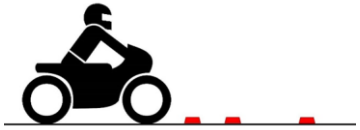


This project is funded by the European Union

A3.2 T5 – Proposal for a verification standard

Automatic eCall: No-Trigger tests:

Misuse:
Riding over three **speed bumps** in a row. The test is conducted with two different heights of the bumps and different speeds (all inappropriate).



Descending a 150 mm Kerbstone at an inappropriate speed of 40 km/h.

Ascending a 150 mm Kerbstone at an inappropriate speed of 15 km/h.

This project is funded by the European Union

A3.2 T5 – Proposal for a verification standard

Automatic eCall: No-Trigger tests:

Misuse:

- **Wheelie***: manoeuvre with lifting of the front wheel up to at least 45° or the limit of the motorcycle. Afterwards strong braking with the rear wheel brake.

- **Stoppie***: manoeuvre with a lift of the rear wheel up to an angle of at least 30°, then sudden release of the front wheel brake.

* Will be demonstrated in show event on test track

This project is funded by the European Union

HeERO 112

Harmonised eCall European Deployment

A3.3 Data Transmission

Overview and Results

20.10.2017

71263 Renningen

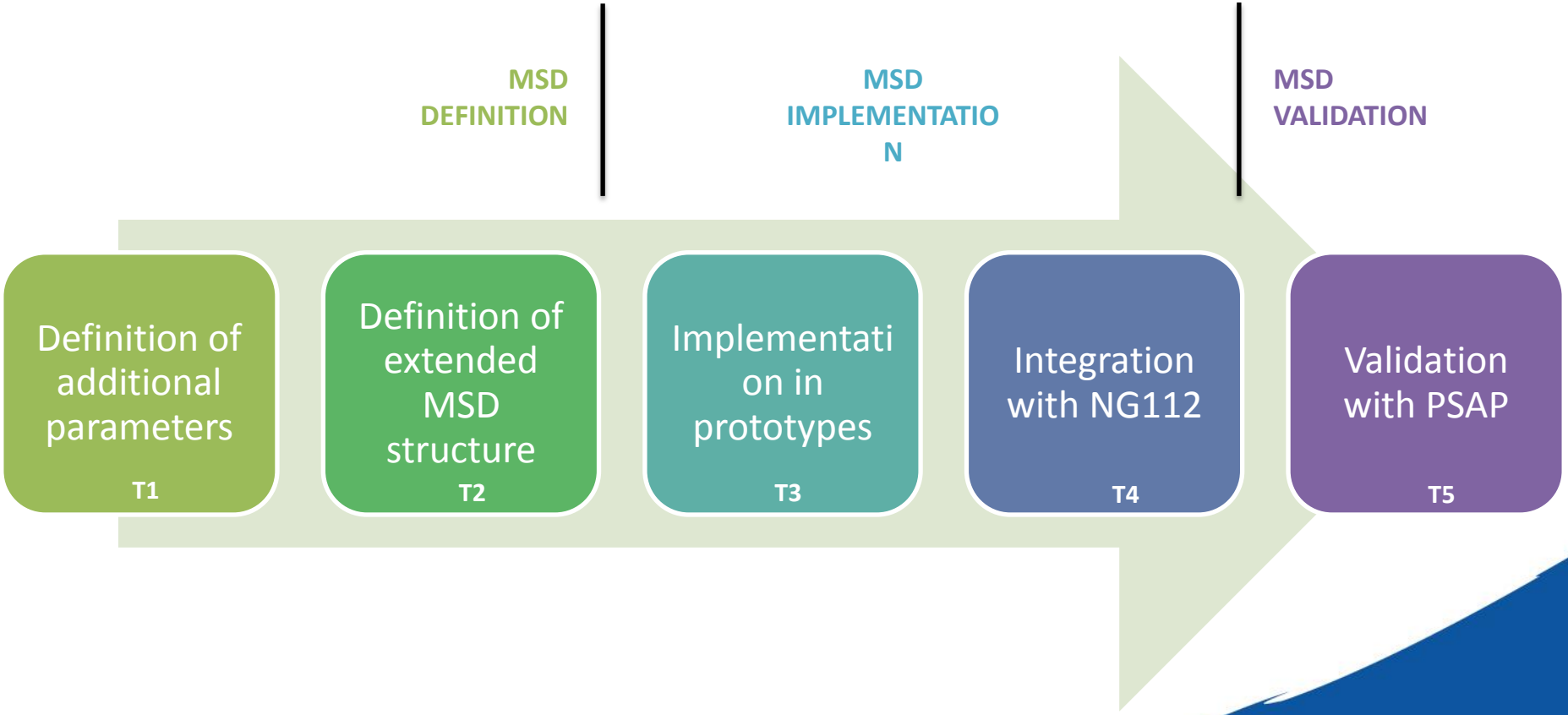
Robert-Bosch Campus 1

Author: O. Iparraguirre

Version: V1.0 20170901

This project is funded by the European Union

Outline. 3.3 Data Transmission



This project is funded by the European Union

T1. Definition of additional parameters

MSD PARAMETER
Medical history
Biometrical data
Meteorological condition
Reliability
Homologation
Owner identification
Number of passengers
Severity
Voice connection indicator

ELIMINATED
Due to concernings with **General Data Protection Regulation** (**GDPR**) (Regulation (EU) 2016/679)

T4. Integration with next generation eCall

Provided our feedback to NG112 group in order to take this parameters into consideration for **future activities**

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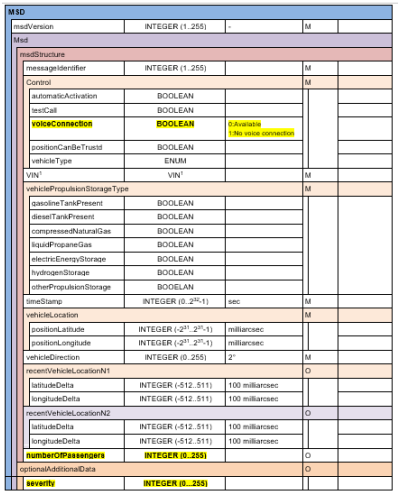
T2. Definition of the structure of the extended MSD

Extended MSD proposal for P2W

MSD PARAMETER	
Number of passengers	O
Severity	OAD
Voice connection indicator	M

EN 15722 standard modification

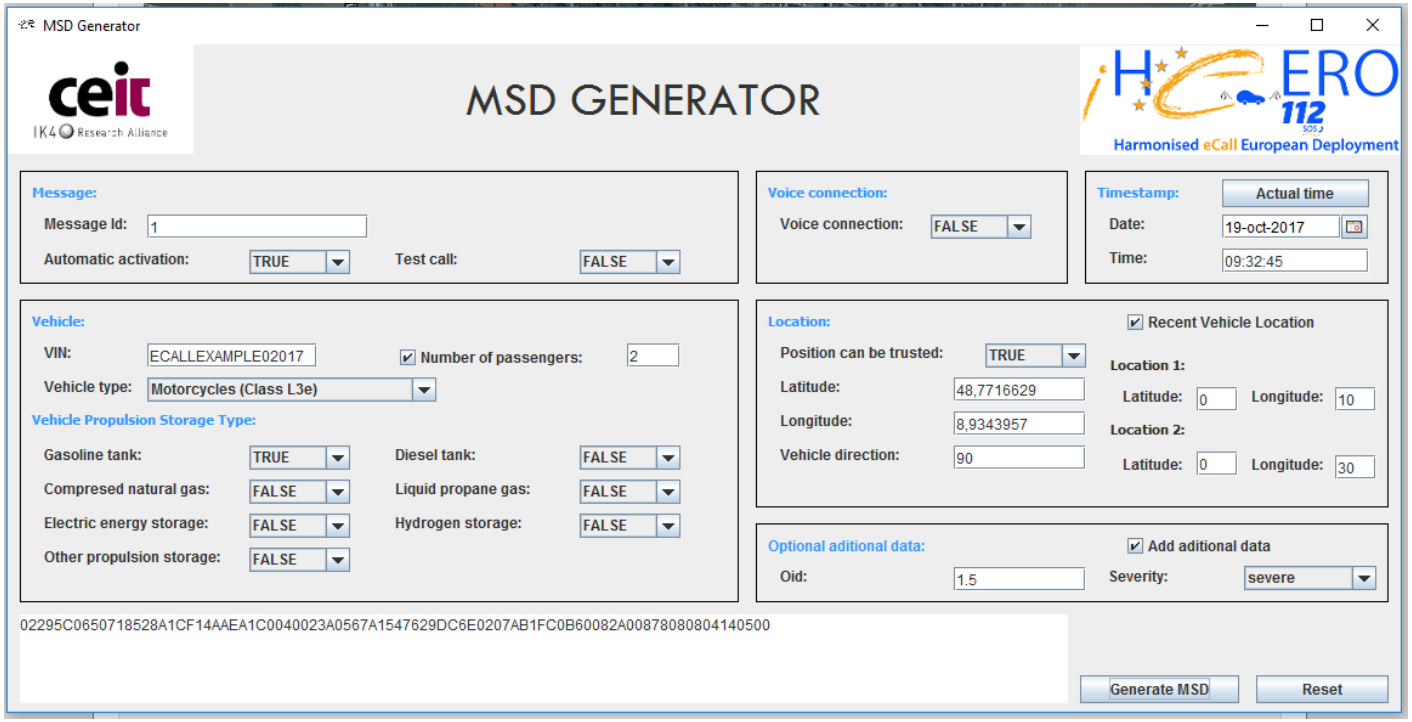


Preparation of P2W schema

```
MSD_ASN1_P2W

DEFINITIONS
AUTOMATIC TAGS ::=
BEGIN

ECallMessage ::= SEQUENCE {
msdVersion INTEGER(0 .. 255),
msd OCTET STRING (CONTAINING MSDMessage)
}

MSDMessage ::= SEQUENCE {
msdStructure MSDStructure,
optionalAdditionalData AdditionalData OPTIONAL,
...
}

MSDStructure ::= SEQUENCE {
messageIdentifier INTEGER(0 .. 255),
control ControlType,
vehicleIdentificationNumber VIN,
vehiclePropulsionStorageType VehiclePropulsionStorageType,
timestamp INTEGER(0 .. 4294967295),
vehicleLocation VehicleLocation,
vehicleDirection INTEGER(0 .. 255),
recentVehicleLocationN1 VehicleLocationDelta OPTIONAL,
recentVehicleLocationN2 VehicleLocationDelta OPTIONAL,
numberOfPassengers INTEGER(0 .. 255) OPTIONAL,
...
}
```


This project is funded by the European Union

T3. Implementation in the prototypes



This project is funded by the European Union

HEROE 112 SOS

Harmonised eCall European Deployment

YAMAHA Revs Your Heart

A3.4 Basic Architecture Recommendation

Overview and achieved results

20.10.2017

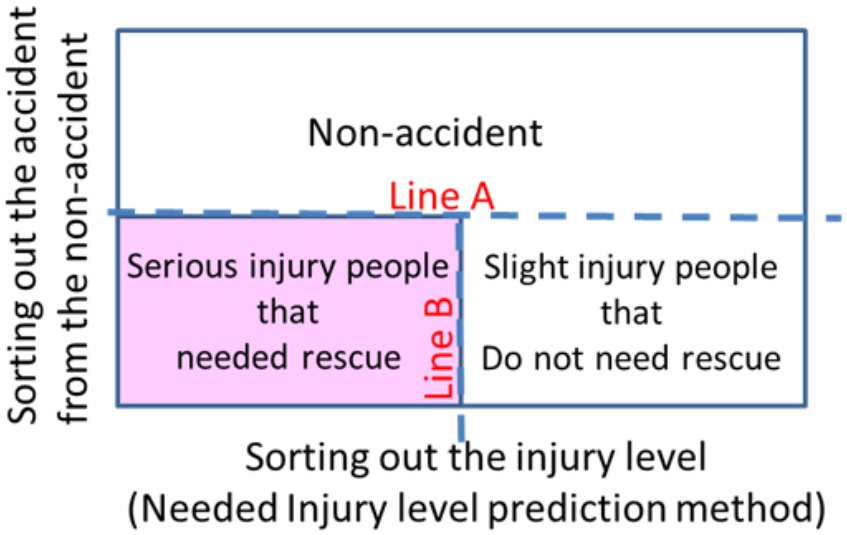
Robert Bosch GmbH
Robert-Bosch-Campus 1
71272 Renningen

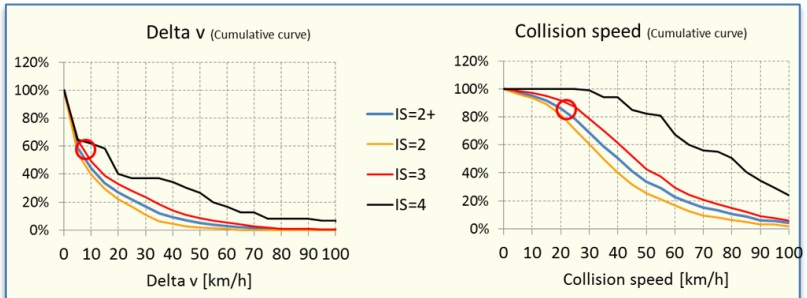
Author:
- **Andrea Borin, Yamaha**

Version:
- **2.1, 20171212**

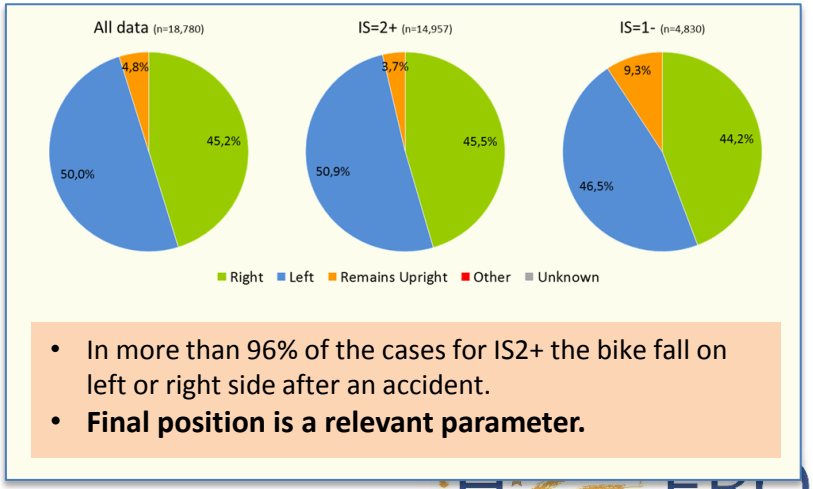
This project is funded by the European Union

A3.4 T2 – Criteria for triggering (1/2)





- 80% of eCall relevant accidents (IS2,3,4) have a collision speed over 20km/h.
- 60% of eCall relevant accidents are over 5km/h, in other words, 40% are in case of Delta v = 0.
- **Collision speed has a higher correlation to eCall relevant accidents than Delta V.**



- In more than 96% of the cases for IS2+ the bike fall on left or right side after an accident.
- **Final position is a relevant parameter.**

Parameter	Description
Collision speed	collision speed of the P2W before 1st collision
Delta-V	delta-v of the P2W before 1st collision
Final Position	Final position of P2W after crash

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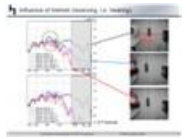
A3.4 T1 – Functional Description

- The minimum set of functions to implement an eCall in a P2W have been defined starting from existing standard EN 16072:2015 and Reg. (EU) 2015/758 for M1/N1 vehicles.

- However, due to P2W specificity, some exceptions have been found and below recommendations have been defined:

1. **Voice Connection <u>only optional</u>**
   - Distance between P2W and rider after an accident  
   - Difficult or even impossible to achieve an optimal installation of microphone/speaker
   - Audio devices are always exposed to harsh environment (reliability)and can be destroyed during the accident
   - Negative effect of helmet, increased in case of under-helmet or ear protectors 
   - External devices (such as Bluetooth) not considered because it's an In-Vehicle System
2. **Pre-warning time & suppression** 
3. **Manual trigger <u>only optional</u>**
   - An eCall system including a manual trigger MUST have a voice connection in order to allow the user to justify the manual triggering to the PSAP - thus reducing the unwanted false calls.
4. **Specific HMI for P2W**
5. **Some other specifications of current standard need to be revised for P2W implementation (i.e., battery capacity)**

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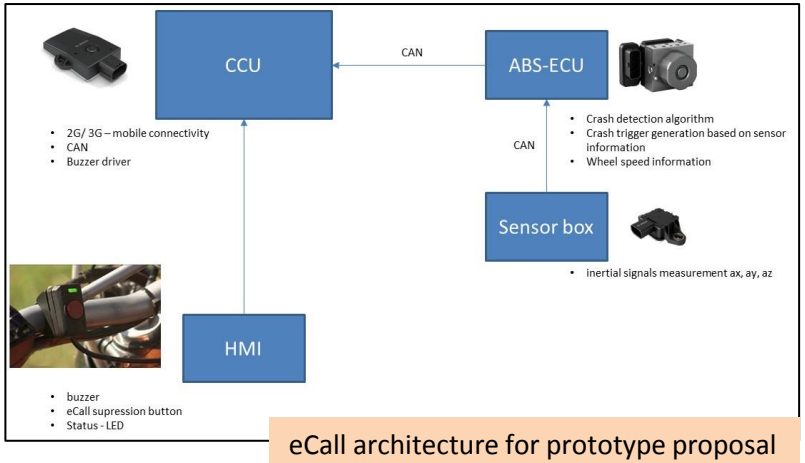
A3.4 T4 – Prototypes



eCall architecture for prototype proposal

Aprilia Tuono 1100

KTM 1290 Super Adventure R

Demo test track

1. Bosch research campus
2. Bosch test track
3. Test track main entrance
4. Inner entrance
5. Inner exit
6. Office
7. Garage

Demo events

Manoeuvre	Description		
	- Stage 1 - Standard Riding Situations you will have in daily riding		
Cornering	Cornering with lean angle		(Aprilia)
Braking & Acceleration	Braking & Acceleration "close to ABS intervention"		(Aprilia)
	- Stage 2 - Rider goes to the Limits / Critical Situation Situations you will have in critical situations and above		
Wheelie	Non-experienced rider: too much acceleration => front wheel lifts (wheelie) => hard break resulting in hard touch down of front wheel		(Aprilia)
	Experienced rider: more extreme lifting angles, speeds		(Aprilia)
	Demonstration of verification proposal: up to 45° followed by braking	X	(Aprilia)
Stoppie	Non-experienced rider: Strong braking in emergency case => rear wheel lifts (stoppie) => sudden break release resulting in hard touch down of rear wheel		(Aprilia)
	Experienced rider: more extreme lifting angles, speeds		(Aprilia)
	Demonstration of verification proposal: up to 30°	X	(Aprilia)
Drifting	Demonstrate system's robustness => go to the limits to the low sider		(Aprilia)
Low Sider	"Rider goes above the limits"	X	(Aprilia)
	- Stage 3 - Difference between Use & Misuse		
Short warmup	Warmup for the KTM and to show that system also work for riding manoeuvre		(KTM)
Pro-Wheelie	show that system is activated & robust		(KTM)
Pro-Stoppie	show that system is activated & robust		(KTM)
Drifting	show that system is activated & robust		(KTM)
Falling Over	Situation at tank stop or parking	X	(KTM)
Rear Impact (50kph)	comparable to situations at traffic light etc., but also rear end crash with traffic ahead	X	(KTM)

This project is funded by the European Union

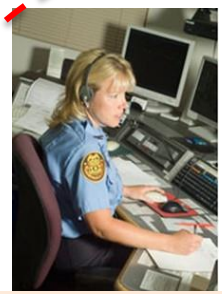
The relevance of „pre-warning“

① Car accident happens

② Airbag is activated

③MSD sent & VC activated

eCall launch



④ PSAP check driver health condition by voice connection

Need for rescue?

No

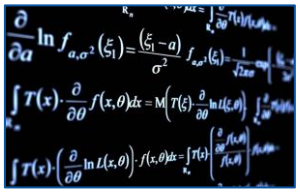
CANCELLED

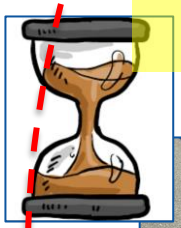
Yes

In both cases the injury level judgement is based on driver/rider feeling.

① P2W accident happens

② The IVS algorithm estimate an eCall maybe needed





③ Pre-warning time, the rider self estimate its health conditions

Need for rescue?

No

④Suppression

Yes

eCall launch

④MSD sent

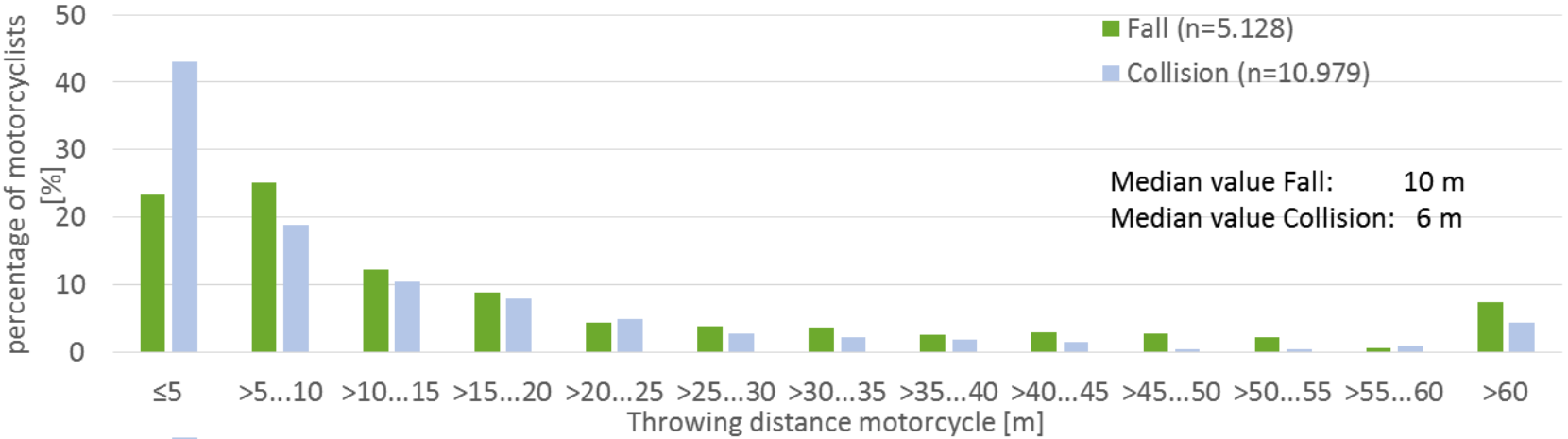
This project is funded by the European Union

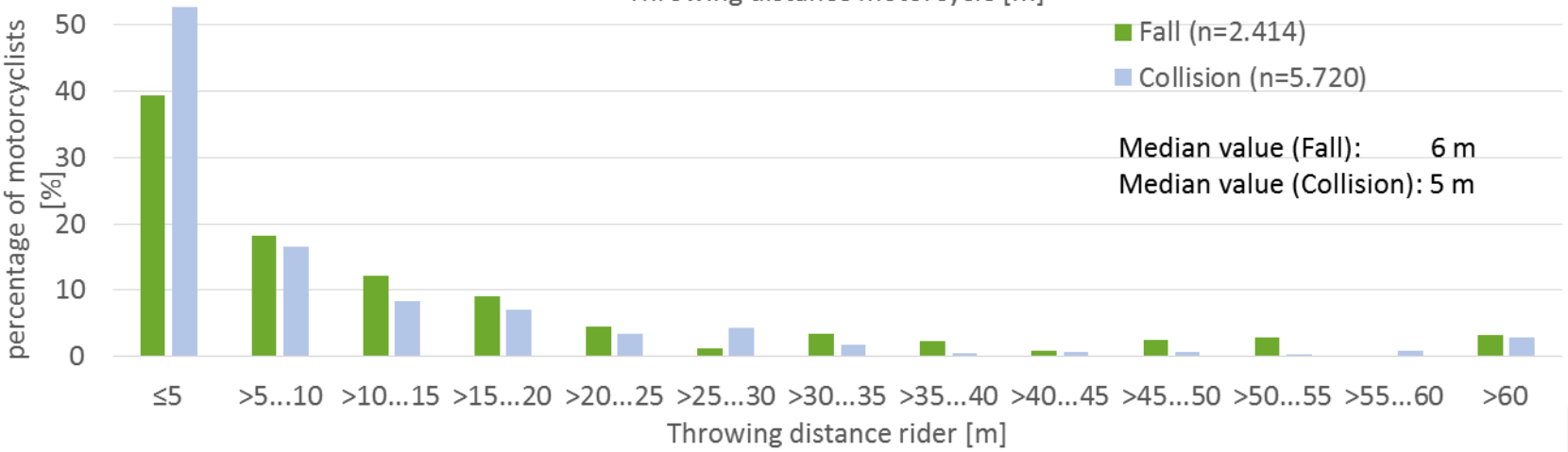
HeERO 112 Harmonised eCall European Deployment

Characteristics P2W application

- Separation of rider and motorcycle

Source: GIDAS / VUFO GmbH





Harmonised eCall European Deployment

A3.5 Classification of severity

Overview and Results

20.10.2017

71263 Renningen

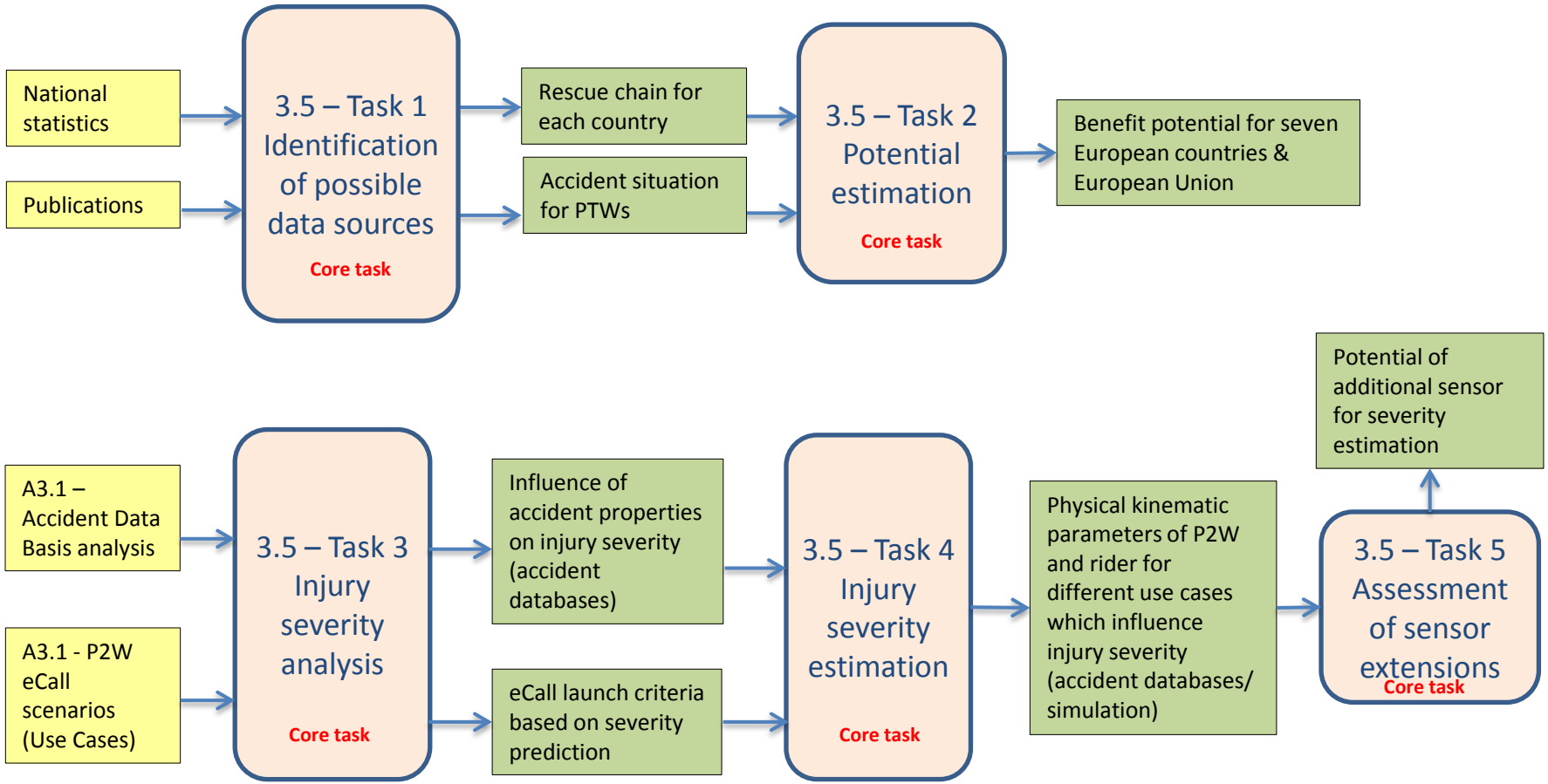
Robert-Bosch Campus 1

Author:
- **Alexander Skiera**

Version:
- **<ID>, <date>**

This project is funded by the European Union

Activity 3.5 – Task structure



This project is funded by the European Union

Activity 3.5 – Analyzed topics

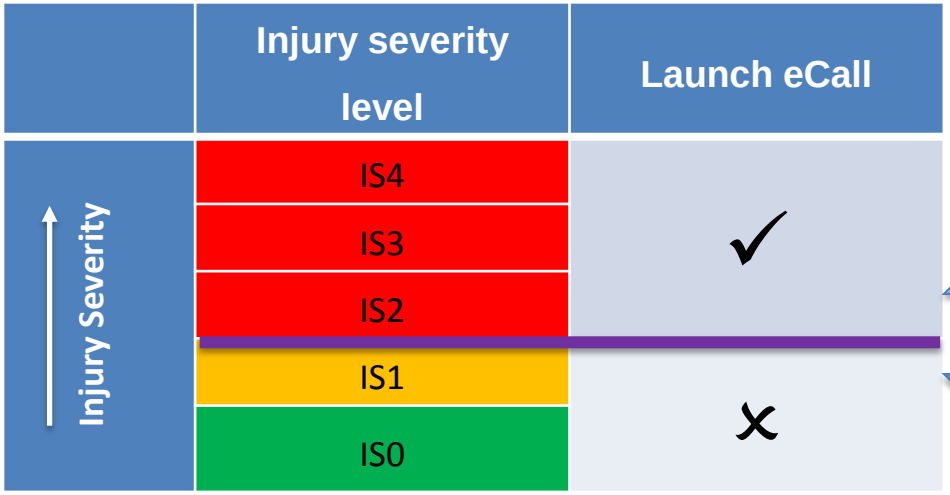
1) What is the benefit of a P2W eCall system?

2) How to determine the necessity of an eCall?

3) How to estimate rider severity in an accident?

This project is funded by the European Union

Classification of eCall necessity: Challenge & Idea



IS4=fatally injured within 30 days

IS3=seriously injured w/ hospitalization (>24h)

IS2=slightly injured w/ hospitalization (<24h)

IS1=slightly injured without hospitalization

IS0=uninjured

Current situation:

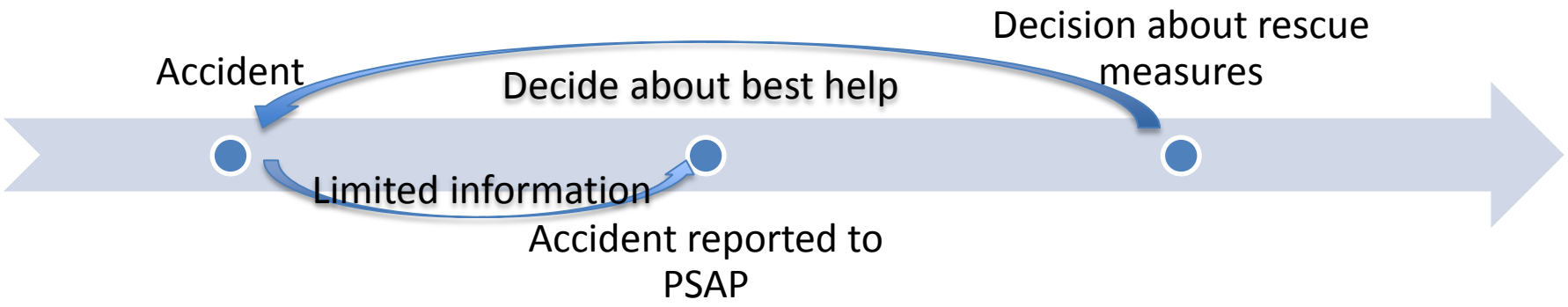
- Assessed algorithm within A3.4 uses collision speed, final bike position and assumptions of rider and other party interaction

Aim:

- Development of a classification model which determines the necessity of eCall launch
- Optimize the relation: High eCall benefit ⇔ Low false call rate

This project is funded by the European Union

Severity estimation: Situation & Idea



Current situation:

- Severity information only transferred verbally to PSAPs or not at all
  → High uncertainty of suitable rescue measures

Potential:

- Increase efficiency of rescue chain and minimize needed resources
  → reduce injury severity
- Reduction of unneeded eCalls

Mission:

- Provide accurate severity information to PSAP

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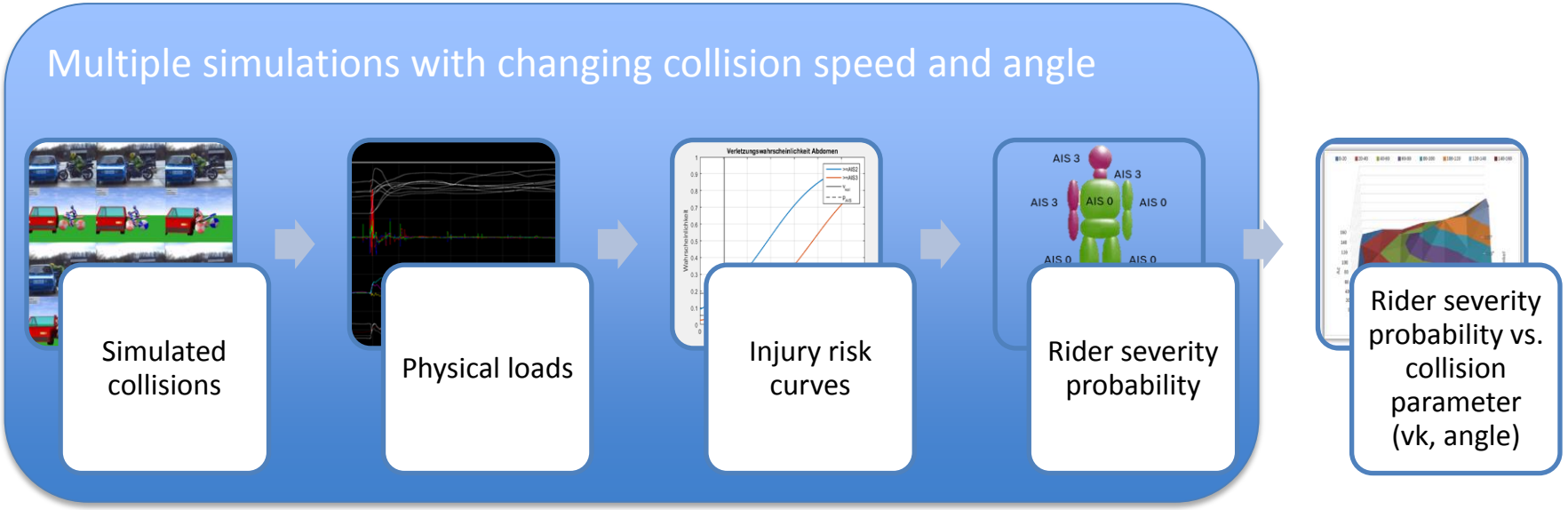
Severity estimation: Methodology



Aim:

- Identification of correlations between injury severity and collision parameters
- Assessment of a potential IVS based severity estimation

Result:

- Injury probability depending on collision type, - speed and - angle

IVS – In Vehicle System

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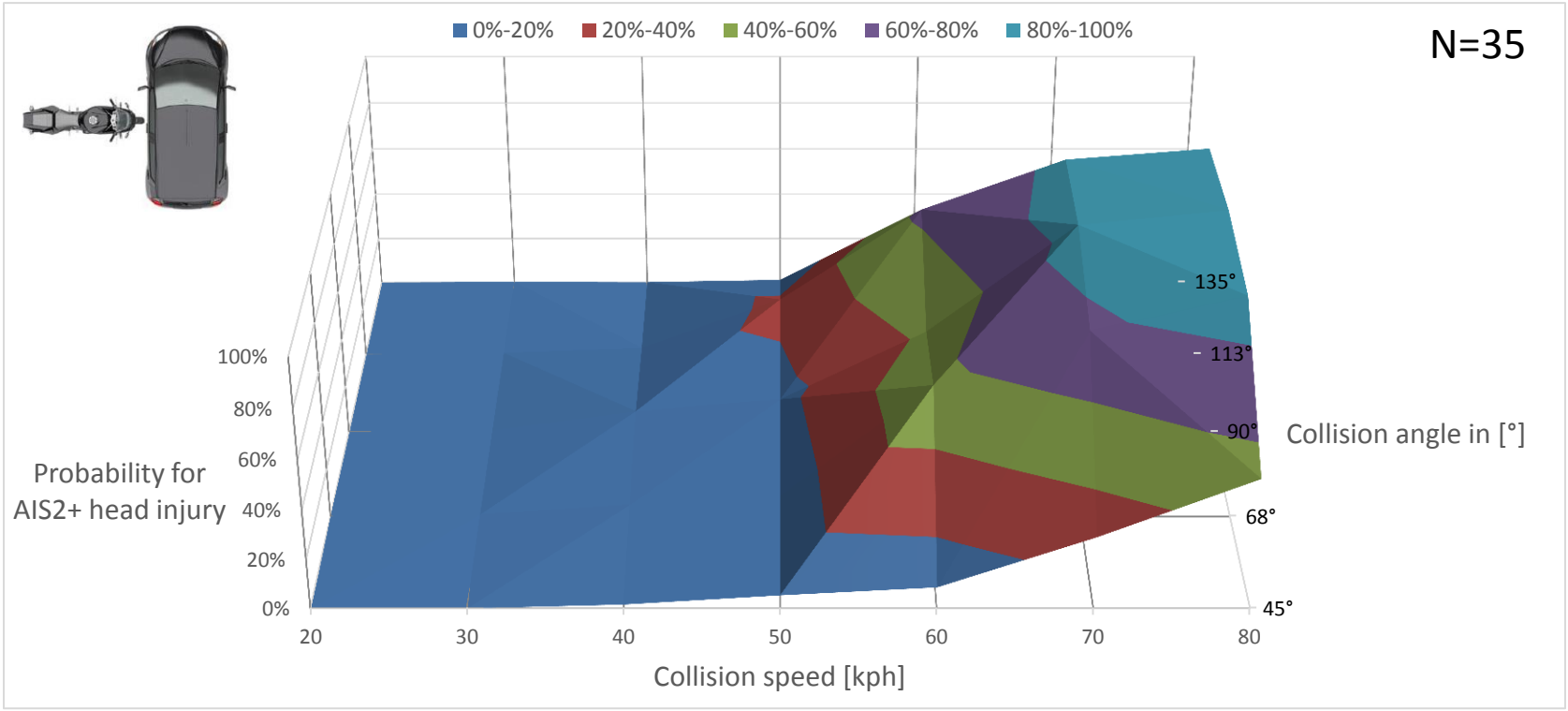
Severity estimation: Result



Interpretation:

- AIS2+ head injury probability increases from 50kph to 70kph by 80%
- AIS2+ head injury probability decreases from 90° to 45° by 40% at 80kph

[1] AIS: Abbreviated Injury Scale, ranges from 0 to 6, where 6 is most severe injury category

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HERO 112

Harmonised eCall European Deployment

A3.6 Retrofit

Overview and Results

20.10.2017

71263 Renningen

Robert-Bosch Campus 1

Author: A. Brazalez

Version: V3.0 20171018

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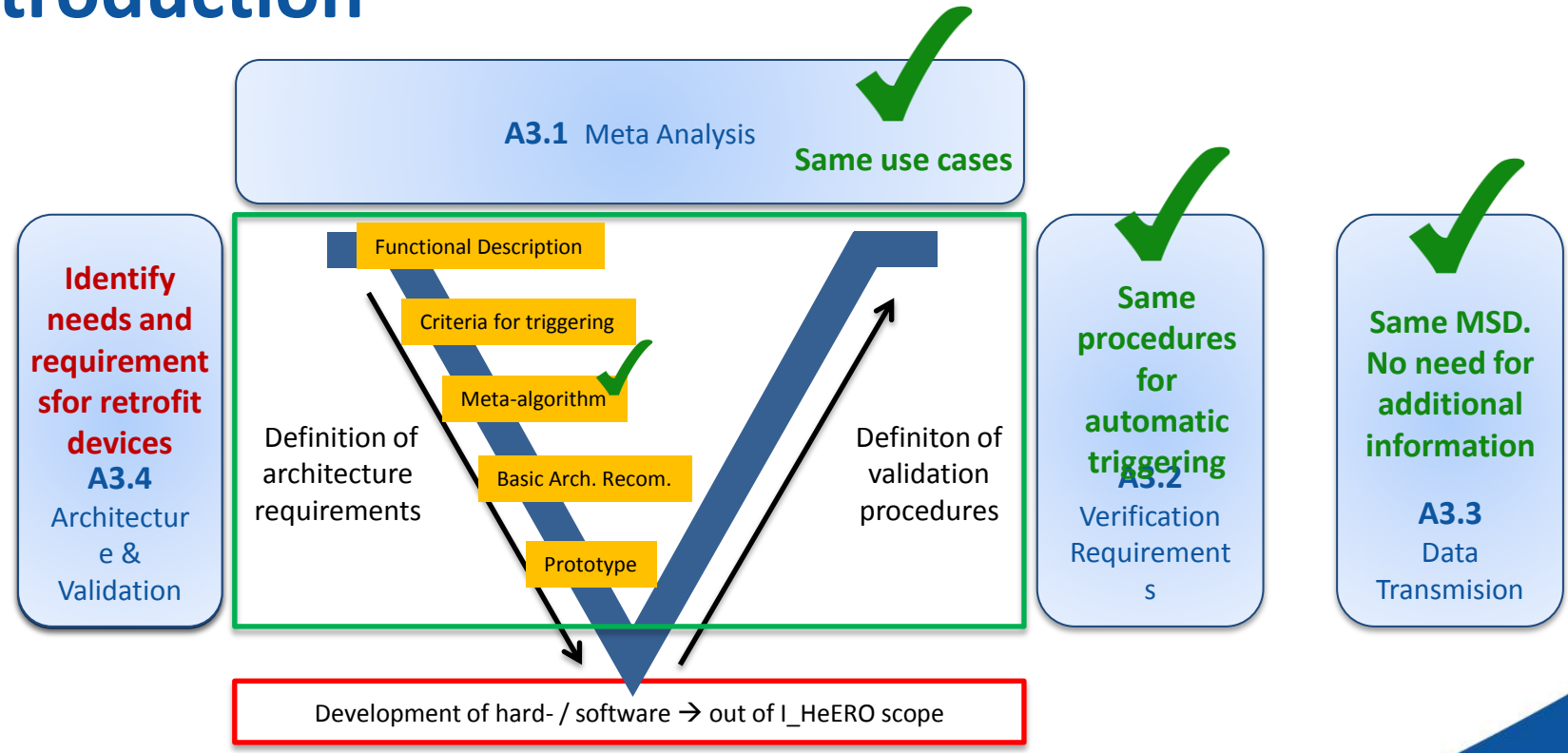
Introduction



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T3. HMI for retrofit devices

1. Market product analysis
   existing e-call retrofit devices

BMW – OEM solution

Bosch – Supplier solution

Digades – Pure aftermarket solution

Item	Output
Sensors	Accelerometer Lean angle sensor
Responders	3rd party PSAP
Communication	Integrated GSM module Call-back procedure
eCall cancelation	yes
Status for retrofit	yes

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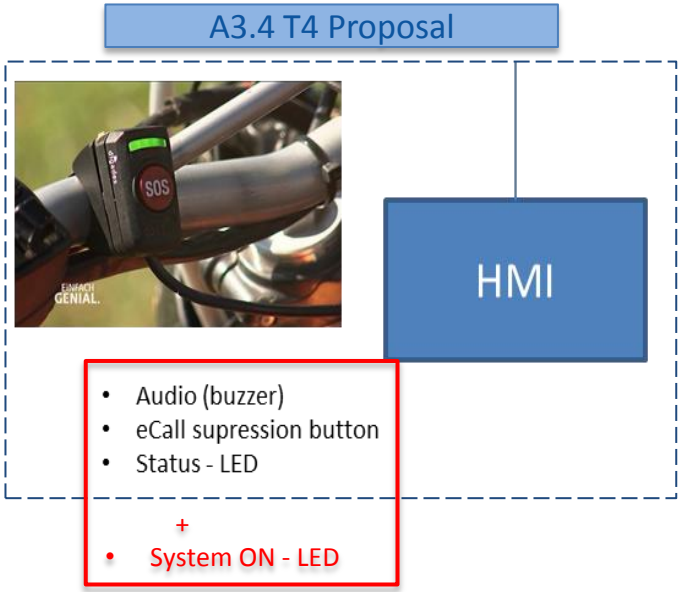
T3. HMI for retrofit devices

1. Market product analysis
   existing e-call retrofit devices
2. eCall indispensable information
   what needs to know the rider?
3. HMI Normative Review
   Complete Review
4. HMI proposal for retrofit devices
   Minimum requirements



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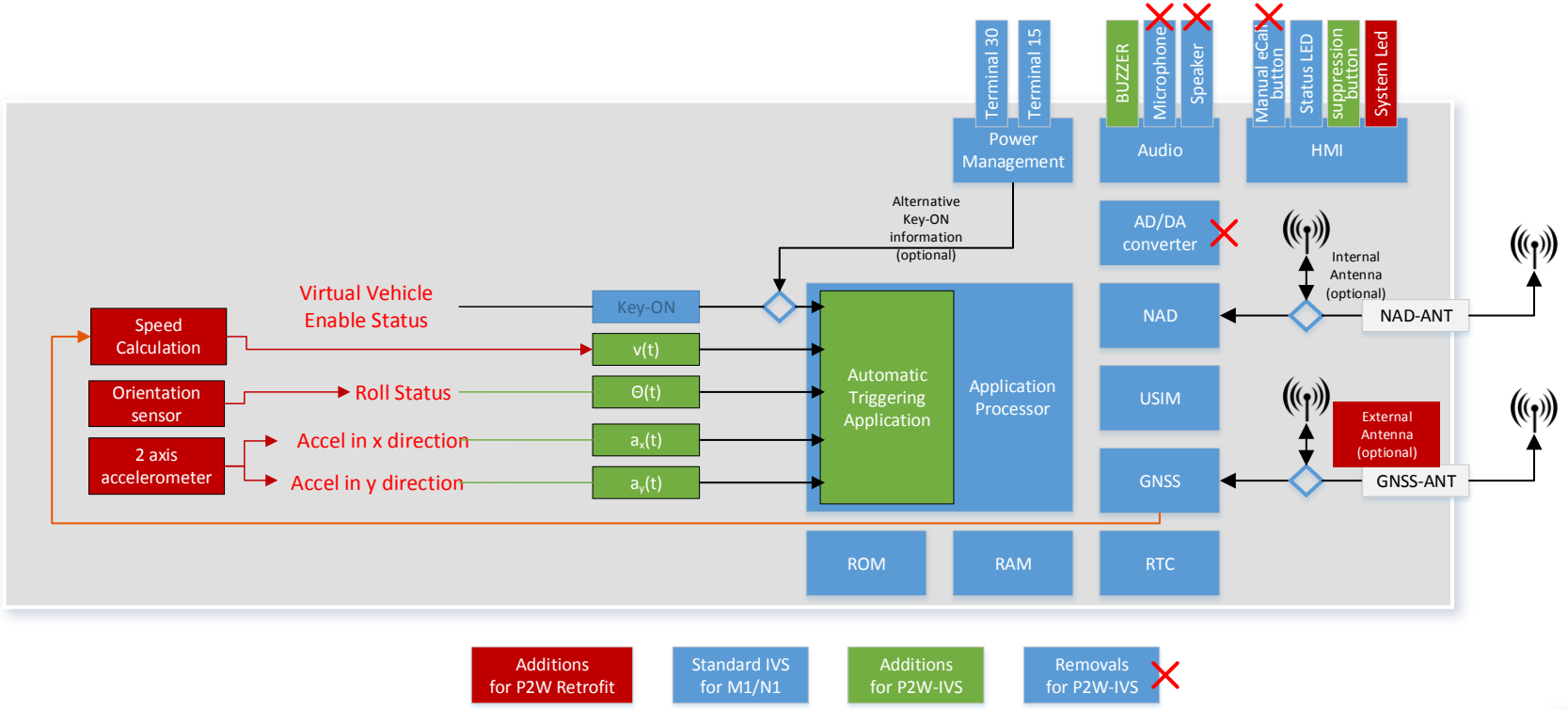
Retrofit Global Architecture



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Harmonised eCall European Deployment

Conclusion of the I_HeERO Project-Activity 3 ecall for P2W

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Contributions

22 Workshops and F2F meetings

Subcontracting of institutes

Organization of meetings from all partners

500 pages of report and meeting minutes

Management meetings and Sync telecons

Powerful discussions

Thousands of emails

Support from OEM research offices

Full management support

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Main achievements

- Voice Connection (VC) to PSAP has to become optional for P2W.
- Manual triggering should be required in case the optional Voice Connection is applied.
- Minimum requirements defined for high probability of P2W-eCall introduction.
- Verification of automatic triggering is defined.
- Cooperation with CEN TC 278 WG15 and PT1507 established. Recommendations communicated.
- A basic proposal for a retrofit solution is defined.
- Severity assessment of injury study by means data from the bike.

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Will we have I-HeERO 2.0?

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Harmonised eCall European Deployment