



i Mobility
Challenge

i Mobility
Support

**Deployment status and
users' willingness to pay
– results on selected in-
vehicle ITS systems**

Background

- Expectations towards traffic:
 - Reduced burden on environment – less CO2 emissions
 - Vision zero of traffic safety
 - More efficient mobility of people and goods
(European white paper on transport, 2011)
- Expectations towards ITS (Objectives of European iMobility Forum in time period 2011-2020):
 - 30% reduction in the number of fatalities across Europe
 - 30% reduction in the number of seriously injured persons across Europe
 - 15% reduction of road traffic related congestion
 - 20% improvements in energy-efficiency
 - 50% increase in availability of real time traffic and travel information
(<http://www.imobilitysupport.eu>)

Priority iMobility Systems

Infrastructure based priority systems

- Dynamic traffic management
- eCall
- Eco-driving assistance
- Eco-driving coaching
- Extended environmental information (extended FCD)
- Local danger warning
- Real-time traffic and travel information
- Speed alert

Vehicle based priority systems

- Adaptive headlights
- Blind spot monitoring
- Emergency braking
- Obstacle and collision warning (including adaptive cruise control)
- Lane keeping support

<http://www.imobilitysupport.org>

<http://www.imobility-effects-database.org>

Expected impacts for priority iMobility systems



- Expected impacts of priority iMobility systems are presented in the iMobility Implementation Road Map
- The estimates are based on a literature study and expert assessment

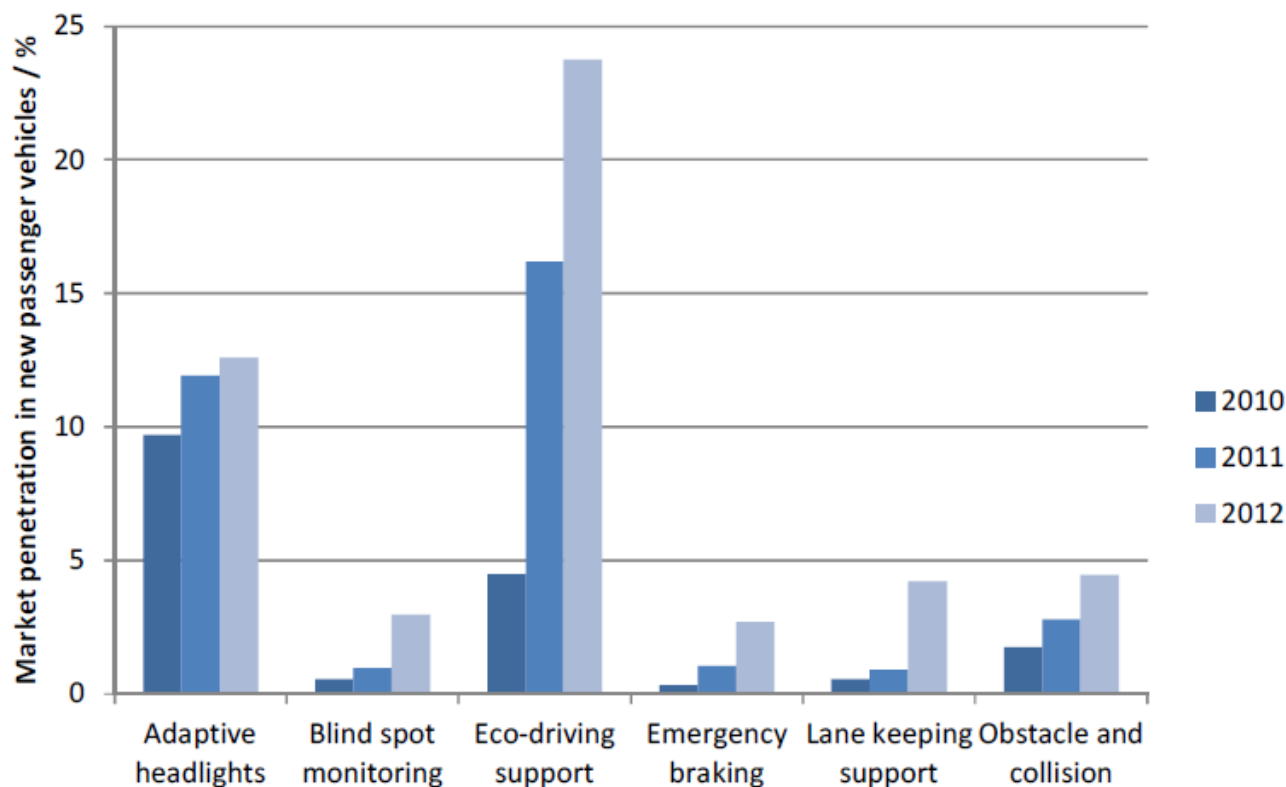
Priority systems	Accident type especially affected	Local results in specific conditions for effects on all accidents for vehicles or roads equipped based on research incorporating accident analysis
Obstacle & collision warning	rear-end crashes	-
Emergency braking	rear-end crashes	all fatalities EU -7% all injuries EU -7%
Blind spot monitoring	side collisions	-
Adaptive head lights	accidents with pedestrians and cyclists on unlit roads	-
Lane keeping support	head-on or run-off-road, side collisions	injuries EU -2 to -6% all fatalities EU -5 to -10%
RTTI	accidents in adverse conditions, pile-ups	accidents in slippery conditions -5 to -15
Dynamic traffic mgmt (VMS)	accidents in adverse conditions, pile-ups	all injury crashes -5 to -20% all fatal crashes -10 to -25%
Local danger warning	accidents in adverse conditions, pile-ups	all injury crashes -1 to -15%
Extended environmental information	accidents in adverse environmental conditions	-
eCall		all fatalities -2 to -15%; EU -6% severe injuries -3 to -15%; EU -6%
Speed Alert	accidents caused by exceeding speed limits	all injuries EU -6% * all fatalities EU -9% *
Dynamic navigation	all accidents	reduced exposure but increased accident rate due to driving on lower category roads
Eco-driving	accidents caused by exceeding speed limits	Similar effects as speed alert if the functionality includes that part

Deployment status of priority iMobility systems

Priority system	Trans-European road network coverage in EU28	Fleet penetration in EU28
Vehicle based systems		
Obstacle and collision warning (incl. ACC)	-	<1%
Emergency braking	-	<1%
Blind spot monitoring	-	<1%
Adaptive headlights	-	1–5%
Infrastructure based systems		
RTTI	RDS-TMC: 20–40% DAB: <10%	RDS-TMC: 20– 40% DAB: <1%
Dynamic traffic management	Variable speed limits: 5–10%	-
Local danger warning	10–30 % (of critical spots requiring local danger warnings)	-
Extended environmental information (extended FCD)	<5%	<1%
eCall	0	0
Speed alert	5–20%	Built-in: 1–10 %
Dynamic navigation	See RTTI	Built-in: 5–10 % Nomadic and aftermarket: 10–40 %
Eco-driving	5–10 %	Eco-driving assistance: 5–10 % (built-in) <1% nomadic and aftermarket Eco-driving coaching: <1% (all)

Deployment rates of vehicle based priority systems – increasing but from a low base

Priority system	2010	2011	2012
Adaptive headlights	9.7%	11.9%	12.6%
Blind spot monitoring	0.57%	0.97%	3.0%
Eco-driving support	4.5%	16.2%	23.7%
Emergency braking	0.34%	1.1%	2.7%
Lane keeping support	0.55%	0.90%	4.2%
Obstacle and collision warning (including ACC)	1.8%	2.8%	4.4%

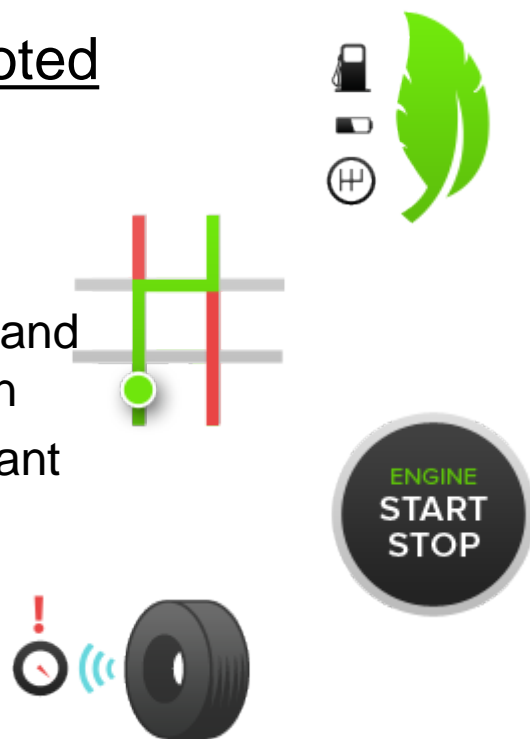


Öörni, R. 2013. iMobility priority systems monitoring report, Deliverable D3.2 of iMobility Support. and study reports by FSD GmbH

ITS systems promoted in iMobility Challenge

Systems promoted to consumers

- Eco-driving assistance
- Real-time traffic and travel information
- Start-stop assistant
- Tyre pressure monitoring



Systems promoted to decision-makers

- Eco-driving coaching
- eCall
- Dynamic traffic light optimisation
- Cooperative adaptive cruise control
- Fuel efficient route choice
- Speed alert



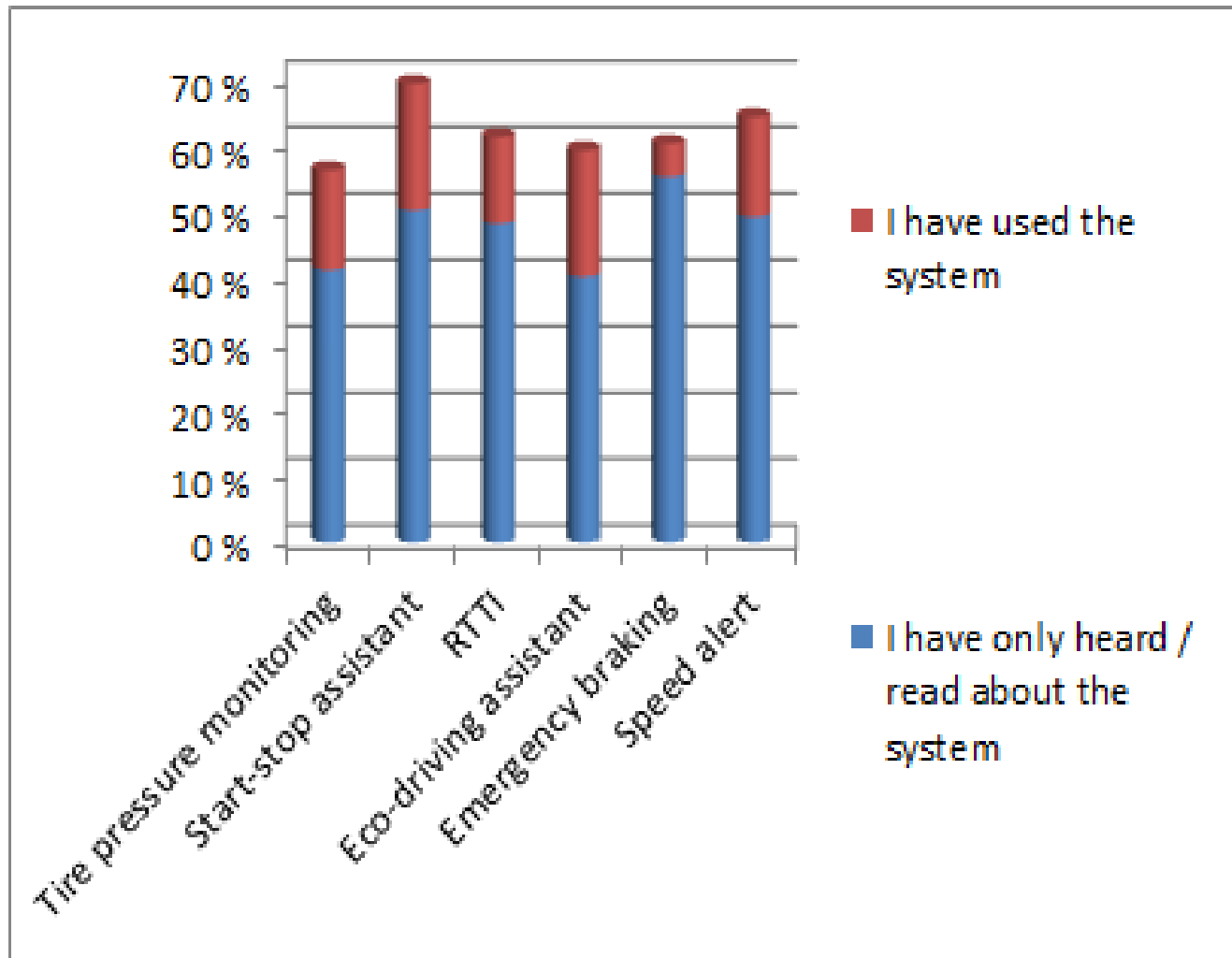
Descriptions of the systems are available in iMobility Challenge D2.1, <http://www.imobilitychallenge.eu>

Impacts on environment, safety and mobility	
+	Has potential or minor impacts or limited information available on impacts
++	Information on impacts available from existing research
+++	Information on substantial impacts available from research
Technological maturity	
+	Prototype or pilot
++	Prototype or pilot planned for commercial launch within five years
+++	Commercial product available
Time horizon for deployment	
+	Potentially ready for deployment after longer time than five years
++	Ready for large scale deployment within five years
+++	Ready for large scale deployment

Öörni, R. and Schirokoff, A. 2013. Mapping of the systems. iMobility Challenge deliverable D2.1.
<http://www.imobilitychallenge.eu>

iMobility Challenge - Mapping of systems									
	Background		Criteria					Results	
	Priority iMobility system	Cooperative system	Environment	Safety	Mobility and efficiency	Technological maturity	Time horizon for deployment	System to be promoted to consumers	System to be promoted to decision-makers
Eco-driving assistance	X	-	+++	-	-	+++	+++	X	X
Eco-driving coaching	X	-	+++	-	-	+	++	-	X
eCall	X	X	-	+++	-	++	++	-	X
Fuel-efficient route choice including advance planning	-	(X)	++	-	-	+	++	-	X
Dynamic traffic light optimisation and optimum speed advisory	-	X	+	-	-	+	++	-	X
Cooperative adaptive cruise control	-	X	+	-	+	+	+	-	X
Intersection safety assistant	-	X	-	+ / +++	-	+	+	-	-
Start-stop assistant	(X)	-	++	-	-	+++	+++	X	X
Tyre pressure monitoring system	-	-	++	+	-	+++	+++	X	X
Cooperative local danger warning	-	X	-	+	+	+	+	-	-
Wrong way driving warning	-	X	-	+	-	+	+	-	-
Traffic signal violation warning	-	X	-	+	-	+	+	-	-
Speed alert	X	(X)	+	+++	-	+	++	-	X
Real-time traffic information	X	X	+	++	+	+++	+++	X	X
Post crash warning	-	X	-	+	-	-	+	-	-
Adaptive headlights	X	-	-	+	-	+++	+++	-	-
Emergency braking	X	-	-	++	-	+++	+++	-	-
Lane keeping support	X	-	-	++	+	+++	+++	-	-
Blind spot monitoring	X	-	-	+	-	+++	+++	-	-

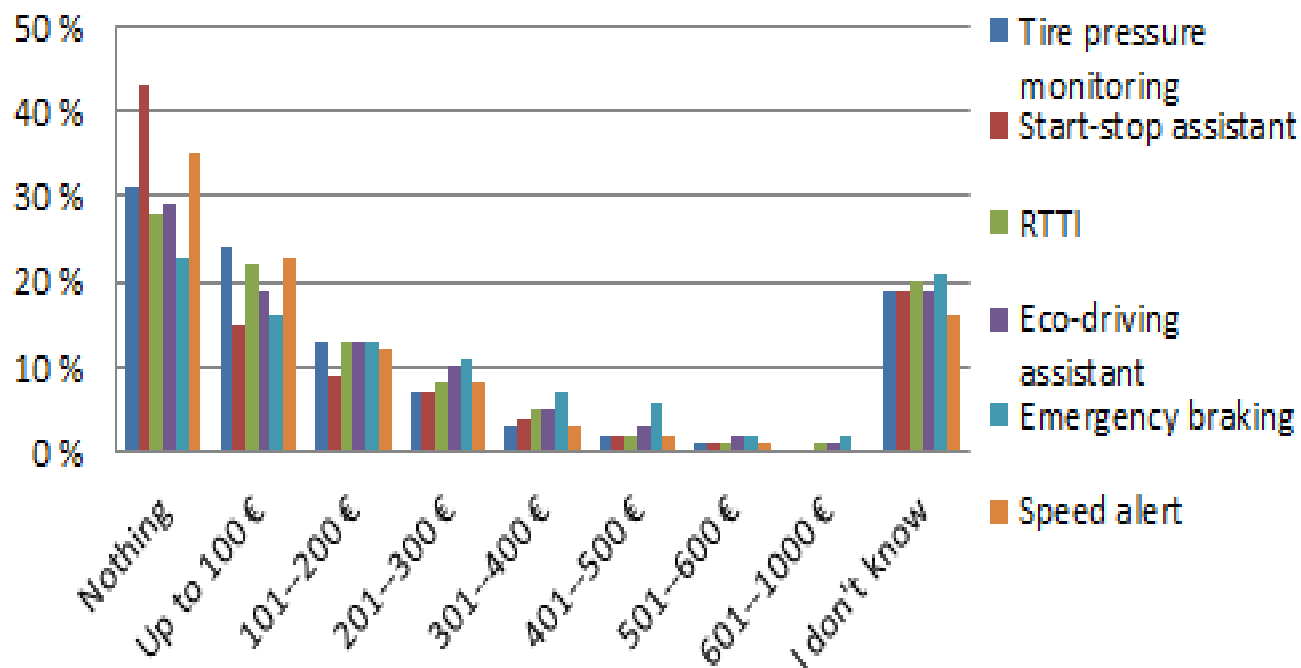
Users' awareness of iMobility Challenge systems



- Users' awareness and demand for iMobility Challenge systems were studied with a questionnaire
- n > 5000, data collection in FI, NL, ES, NL and CZ
- The study results indicate moderate levels of user awareness of the systems
- Most car users have still not experienced the systems themselves

Car users' willingness to pay for iMobility Challenge systems

Car users' self-reported willingness to pay, all respondents



- A significant share of car users is willing to pay for the systems analysed in the study
- Most respondents indicated that they are not willing to pay more than €300
- The results suggest that car users are sensitive to price
- The results are based on a questionnaire, not data on observed purchasing behaviour

Discussion and conclusions

- Market penetration of intelligent vehicle safety systems in new vehicles is increasing but from a low base
(except ESC which is now mandatory in new vehicles in EU)
- European car users have moderate levels of awareness of the existing in-vehicle ITS systems
- Willingness to pay was studied with a questionnaire, collecting the same data with other means would be difficult
- Large share of users are willing to pay for the systems. However, most users were not willing to pay more than €300 for the systems.
- Information available on the impacts of systems is still limited, this applies especially to novel systems. For some novel systems, available estimates on impacts are based on simulation or expert opinion
- Applications intervening in driving task are already on the market!

More information

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TECHNOLOGY «FOR BUSINESS»

