

Prioritisation of ITS systems for Field Operational Tests

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TNO | Knowledge for business



Content

- Why and how
- Results of one stakeholder: Dutch MoT
- Results of multi stakeholders
- Policy Decision Support System
- Questions?



Why Prioritisation of ITS systems for Field Operational Tests

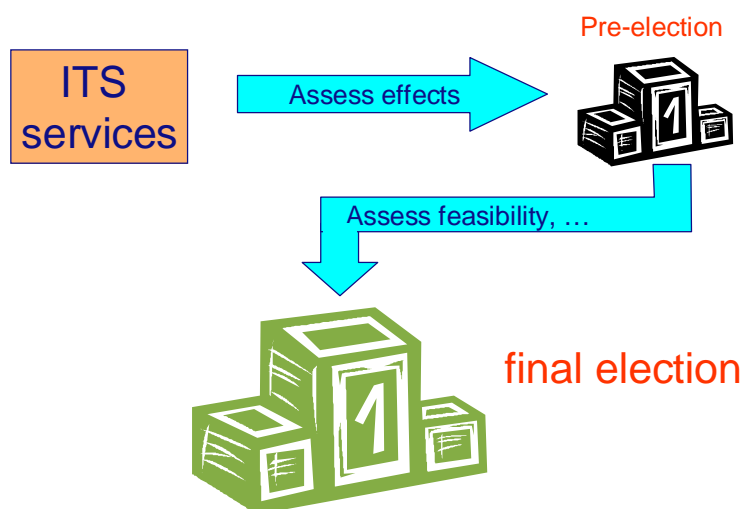
1. Prioritisation study for Dutch Ministry of Transport
 - Prioritising potential ITS systems and services for Dutch FOTs
 - What are existing and planned projects for smart vehicles and cooperative systems?
 - What are the social benefits of different systems?
 - What are potential systems/services for FOTs?
 - What is feasible in a FOT on short term, mid term and long term, in terms of implementation/deployment?
2. Other stakeholder groups interested in methodology
3. Final result: priority analysis of multiple stakeholders interest for ITS services/systems on Dutch FOTs

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How the “ITS service” (s)election



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Criteria for prioritisation

- Criteria for policy objectives:
 - **Accessibility**: throughput
 - **Reliability**: travel time estimation
 - **Safety**: number of accidents
 - **Environment**: emissions
- Criteria for deployment / Field Operational Test:
 - **Planning**: when can a FOT start?
 - **Feasibility**: what is the complexity of a FOT (organisational, legal)?
 - **Roles and interests**: the instruments of the stakeholder to realize the ITS?
- **Commercial interest**

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Ranking on policy Criteria

- Value for tested impacts:
- Value for expert judgements:

Impact range	Normative scale	Value
> 10%	++	10
2 - 10%	+	5
-2% - +2%	0	0
-10% - -2%	-	-5
< -10%	--	-10

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Results after Policy valuation (Only Dutch MoT)

Service/system name	score on Policy criteria
In-Car data collection (FCD, cell probe)	10.00
Cooperative Adaptive Cruise Control (C-ACC)	8.00
Real-time Traffic and Travel Information (RTTI)	7.50
Multimodale reisinformatie	7.50
Recommended speed profiles	5.50
Full range ACC	5.00
Intelligent Speed Adaptation (ISA)	4.50
eCall	3.00
Lane Keeping assistent	2.50
Priority lane allocation to other road users	2.00
Cooperative intersection collision warning	2.00
Belonitor PAYD (lease)	1.50
Adaptive cruise control (ACC)	1.50
Local hazard Warning	1.00
Intelligent Speed Information (ISI)/Speed alert (dynamisch)	1.00
Electronic Stability Programme/Control (ESP/C)	1.00
Obstacle detection/collision warning	1.00
Requested green in a cooperative way	1.00

Score 7.5 or higher: green

Score between 2 and 7.5: yellow

Score lower than 2: orange

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Final results (only Dutch MoT)

Service/system name	Total score
In-Car data collection (FCD, cell probe)	8.50
Priority lane allocation to other road users	7.60
eCall	6.90
Real-time Traffic and Travel Information (RTTI)	6.75
Belonitor PAYD (lease)	6.45
Recommended speed profiles	6.15
Cooperative Adaptive Cruise Control (C-ACC)	5.40
Local hazard Warning	4.80
Intelligent Speed Information (ISI)/Speed alert (dynamisch)	4.80
Intelligent Speed Adaptation (ISA)	4.35
Multimodale reisinformatie	4.25
Full range ACC	3.50
Lane Keeping assistent	2.75
Adaptive cruise control (ACC)	2.45
Cooperative intersection collision warning	1.60

Score 7.5 or higher: green

Score between 2 and 7.5: yellow

Score lower than 2: orange

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Criteria per stakeholder category

Criterion	Ministry of Transport	Regional road ops	Industry	End users
Accessibility	x	x	x	x
Reliability	x	x	x	x
Safety	x	x	x	x
Sustainability	x	x	x	x
Implementation feasibility	x	x		
Planning FOT / Technical feasibility & realisation	x	x	x	x
Business case			x	x
Legal, organisational,... feasibility			x	x
Platform			x	x
Complementarity			x	x
Influence of the ministry of transport	x			
Influence of road operator		x		
Influence governments			x	x
Influence of the OEMs			x	x
Influence of the automotive industry			x	x

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Assigned value to criteria per stakeholder category

Criterion	Ministry of Transport	Regional road ops	Industry	End users
<i>Societal benefits</i>				
Accessibility				
Reliability	0,30	0,41	0,20	0,23
Safety				
Sustainability				
<i>Implementation</i>				
Implementation feasibility				
Planning FOT / Technical feasibility & realisation	0,50	0,39	0,52	0,68
Business case				
Legal, organisational,... feasibility				
Platform			0,06	0,18
Complementarity			0,08	0,05
<i>Influence</i>				
Influence of the ministry of transport				
Influence of road operator	0,20	0,20	0,29	0,09
Influence governments				
Influence of the OEMs			0,11	0,00
Influence of the automotive industry			0,10	0,05

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Top 5 per stakeholder category

Top 5 Ministry of Transport	
1	In-Car data collection (FCD, cell probe)
2	Priority lane allocation to other road users
3	eCall
4	Real-time Traffic and Travel Information (RTTI)
5	Belonitor PAYD (lease)

Top 5 Regional road operators	
1	Multimodal travel information
2	Real-time Traffic and Travel Information (RTTI)
3	In-Car data collection (FCD, cell probe)
4	Adaptive cruise control (ACC)
5	Intelligent speed adaptation (ISA)

Top 5 Industry	
1	Real-time Traffic and Travel Information (RTTI)
2	Priority lane allocation to other road users
3	Local hazard warning
4	Belonitor PAYD (lease)
5	Requested green in a cooperative way

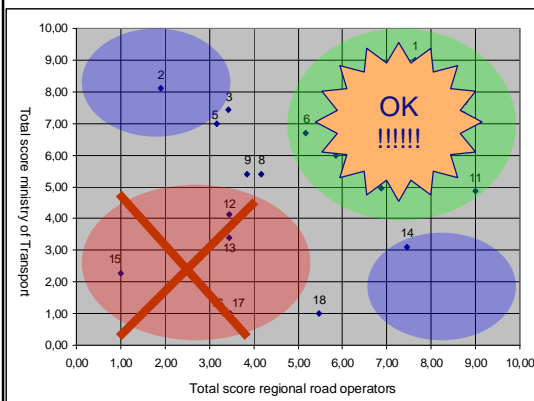
Top 5 End users	
1	Real-time Traffic and Travel Information (RTTI)
2	Belonitor PAYD (lease)
3	eCall
4	Multimodal travel information
5	Priority lane allocation to other road users

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Ministry of Transport vs. regional road operators



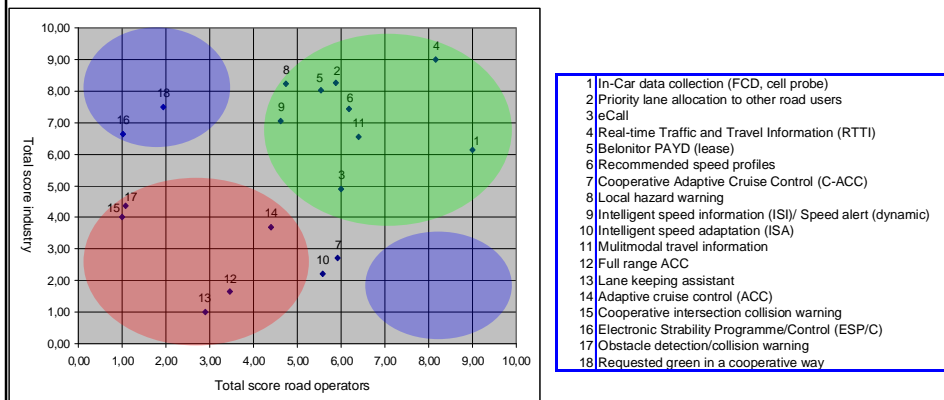
- | | |
|----|--|
| 1 | In-Car data collection (FCD, cell probe) |
| 2 | Priority lane allocation to other road users |
| 3 | eCall |
| 4 | Real-time Traffic and Travel Information (RTTI) |
| 5 | Belonitor PAYD (lease) |
| 6 | Recommended speed profiles |
| 7 | Cooperative Adaptive Cruise Control (C-ACC) |
| 8 | Local hazard warning |
| 9 | Intelligent speed information (ISI)/ Speed alert (dynamic) |
| 10 | Intelligent speed adaptation (ISA) |
| 11 | Multimodal travel information |
| 12 | Full range ACC |
| 13 | Lane keeping assistant |
| 14 | Adaptive cruise control (ACC) |
| 15 | Cooperative intersection collision warning |
| 16 | Electronic Stability Programme/Control (ESP/C) |
| 17 | Obstacle detection/collision warning |
| 18 | Requested green in a cooperative way |

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(Infra) industry vs. all road operators



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Policy Decision Support System

- The Policy Decision Support System is a **multi-criteria assessment methodology and tool** which helps decision makers to **prioritise the feasibility of ITS measures** for deployment through a field operation test (FOT).
- The PDSS offers a two-step approach
 1. Assess/prioritise at the policy level
 2. Assess/prioritise at feasibility for deployment / FOT level
- The PDSS is able to confront the results of different stakeholders such as road authorities, car and infrastructure industry.

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Thank you for your attention!



Do you have any questions?