Workshop C1

Al Bustan Rotana Hotel, Bahri B & Stallion

CITA Corporate Member Presentations
Inspection Procedures and Methods

Chaired by Juha Tukiainen

Member of CITA Bureau Permanent

Workshop C1

Presentation 1

New Lighting Systems – Future Requirements for the Testing Technology

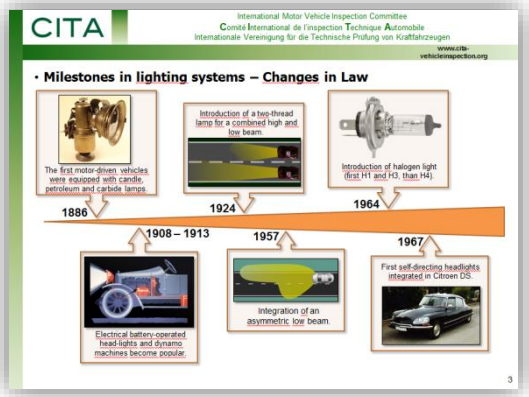
Manfred Rudhart

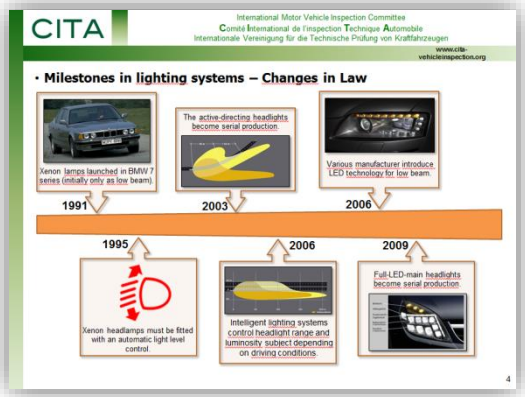
CITA Technical Expert, Brakes – Topic Area on Safety Systems (TA 1), CITA

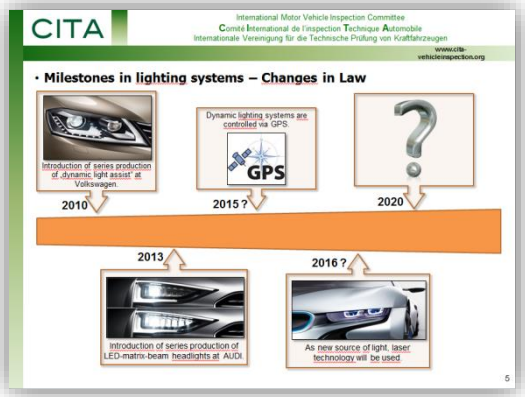
New Lighting Systems – Future requirements for the testing technology

- **Review and innovations since the last conference in Seville**
- **Modern head lights need modern test technology**
- **Start a sub-working group in WG1 for headlight testing**
- **Drafting a recommendation for testing areas**
- **Drafting a recommendation for headlight testers**
- **Future activities - Outlook**

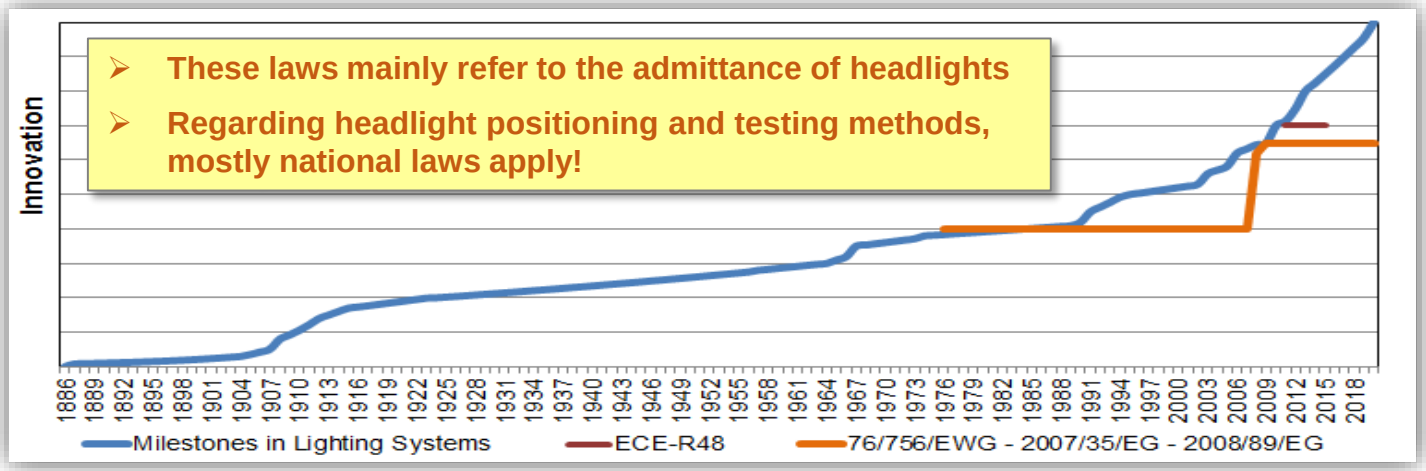
- **Review and innovations since the last conference in Seville**
  - Milestones and Innovations in lighting systems



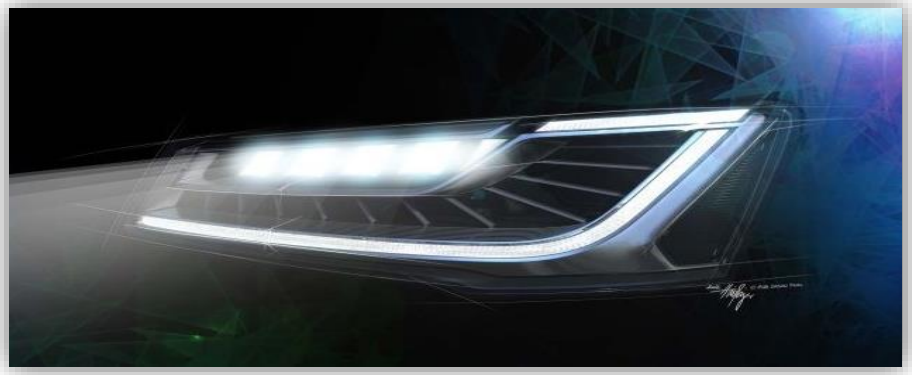




  - Milestones and Innovations in comparison to existing laws



- **Review and innovations since the last conference in Seville**
  - Examples of innovations **"just introduced in the last two years"**



Audi LED-Matrix Beam (A8) Source: AUDI

Audi Laserlight (R8) Source: AUDI

Innovation:

- LED-Matrix lights are comprised of 25 high-beam LEDs per side, clustered in groups of five paired with reflectors.
- Laserlight with illumination distance about 600m
- Connected to the vehicles navigation system

Challenge:

- **Precise requirement regarding inspection and adjustment**

- **Review and innovations since the last conference in Seville**
  - Examples of innovations **"just introduced in the last two years"**

BMW LED-Light (i3) Source: BMW

BMW Laserlight (i8) Source: BMW

Innovation:

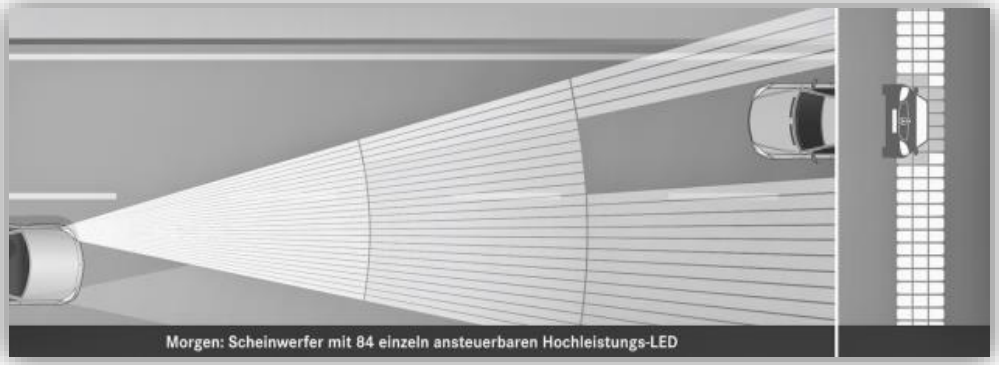
- The first production car with laserlight as a light source
- Dynamic Light Spot detects people and larger animals at a long distance − and selectively illuminates them

Challenge:

- **Precise requirement regarding inspection and adjustment**

- **Review and innovations since the last conference in Seville**
  - Examples of innovations **"just introduced in the last two years"**

Mercedes-Benz MULTIBEAM



Source: Daimler AG

Innovation:

- The new S-Class is only equipped with LEDs
- In the near future 84 LEDs per headlamp will show a even better light quality at night.

Challenge:

- **Precise requirement regarding inspection and adjustment**

- **Review and innovations since the last conference in Seville**

Some Comments to "Advanced Forward Lighting System (AFL)":

- **Benefits:**
  Adaptive headlights adjust their direction and intensity to provide additional illumination on curves, turns, and hills and to highlight potential hazards. The primary benefit of this technology is that it increases the visible range of the forward roadway, particularly when navigating curves and turns.

- **Disadvantage:**
  When the setting of this system is not correct:

  - **It will be illuminated wrong areas on the road - The driver can see less as compared with a conventional system.**

  - **The headlight system is blinding other road users - In particular, this glare intensified of today's lighting systems such as XENON, LED, LASER etc.**

New Lighting Systems – Future requirements for the testing technology

- Review and innovations since the last conference in Seville
- **Modern head lights need modern test technology**
- Start a sub-working group in WG1 for headlight testing
- Drafting a recommendation for testing areas
- Drafting a recommendation for headlight testers
- Future activities - Outlook

- **Modern head lights need modern test technology**

For a correct headlight test and adjustment procedure, the following points need to be fulfilled:



- **The vehicle needs to be checked**
  - Correct tire pressure
  - Loading condition of the vehicle
  - Function of leveling control
  - Clean headlights, cracks in the glass, condensation inside, rusty reflectors
  - State of the light source (incorrect installation, low-price products)
  - …prepared in accordance to manufacturer data

- **Correct Testing procedure**
  - The user must perform the test correctly

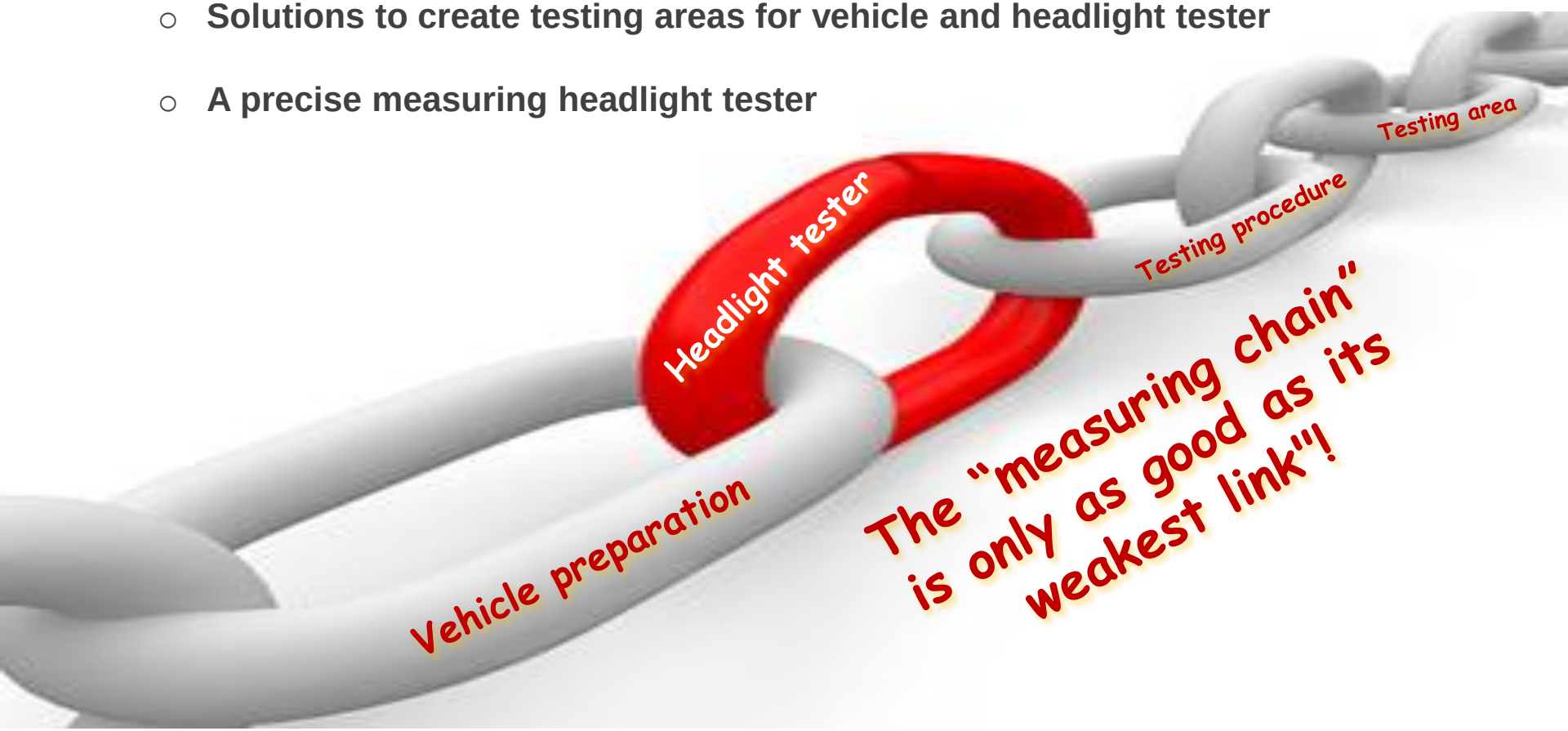
- **Testing area for the vehicle and for the headlight tester**
  - The testing area needs to be „leveled“ (e.g. according to ISO10604)

- **A precise measuring headlight tester**
  - The headlight tester needs to comply with legal minimum requirements

- **Modern head lights need modern test technology**

  We as equipment manufacturer can only provide some parts in the "measuring chain":

  - Solutions to create testing areas for vehicle and headlight tester
  - A precise measuring headlight tester



New Lighting Systems – Future requirements for the testing technology

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- **Start a sub-working group in WG1 for headlight testing**

  After the response to the CITA-presentation in Seville we have decided to start a sub-working group in WG 1. The following points should be discussed:

  - **Testing areas for vehicle and headlight tester**
  - **Headlight tester (digital and analog)**
  - **Drafting a CITA-Recommendation**

Experts of this working group are from:
e.g. VOSA, GOCA, BEISSBARTH, CAPELEC, TESTEK, RDW, FSD and MAHA

New Lighting Systems – Future requirements for the testing technology

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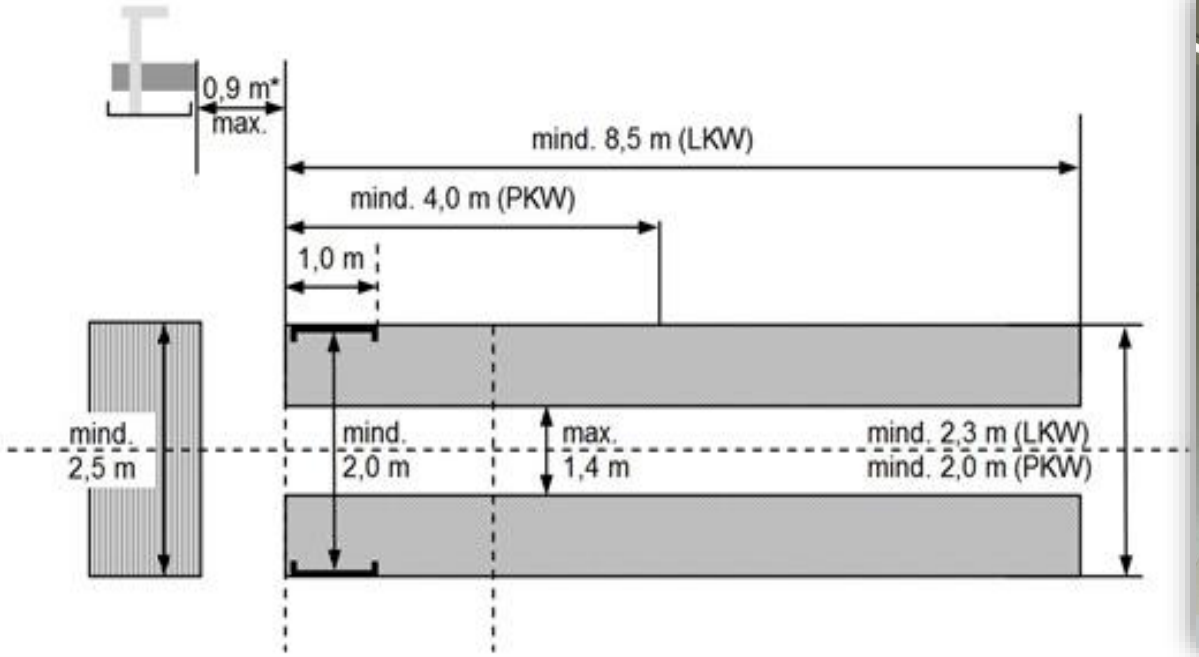
- **Drafting a recommendation for testing areas**

Example of the new German legislation (starting at 1st January 2015):

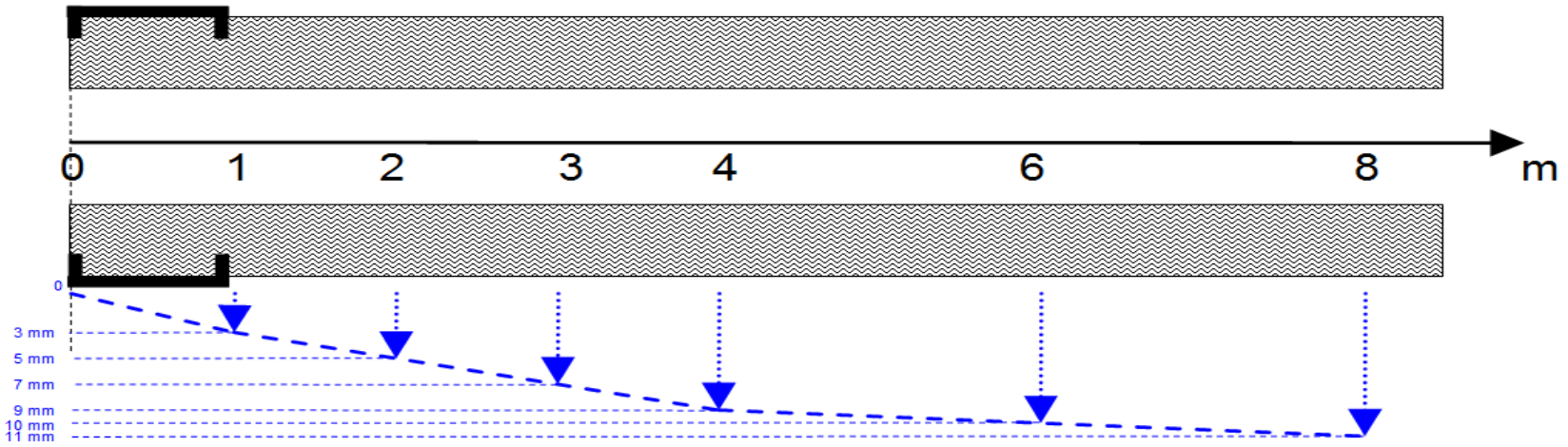
- The installation of two-lane motor vehicles consists of two lanes.
- For the headlight tester either is a suitable surface or rails are provided.
- Size, position and identification of these areas must meet the following figure:



- **Drafting a recommendation for testing areas**

Definition of "unevenness":

- The permissible unevenness of the testing area / lanes showing the following figure:



- The testing area needs to be leveled:
  - Testing area of the headlight tester (max. ± 1 mm/m)
  - Testing area for the vehicle is dependent on the length of the vehicle

New Lighting Systems – Future requirements for the testing technology

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- **Drafting a recommendation for headlight testers**
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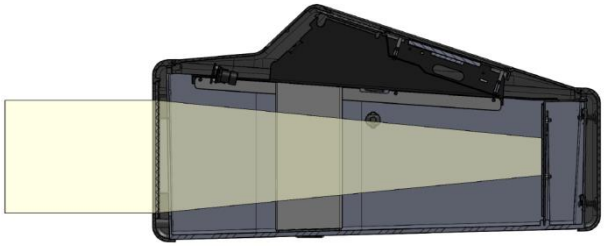
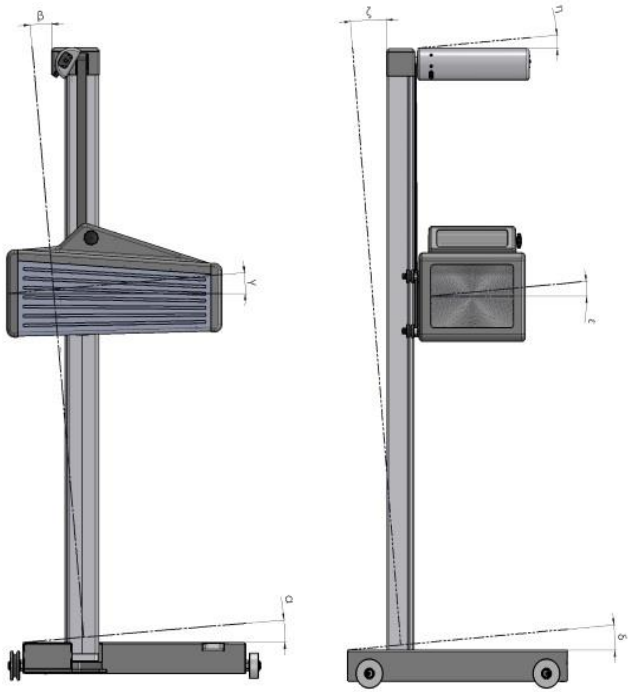
- **Drafting a recommendation for headlight testers**

The description should include:

- Definitions, general characteristics
  e.g. cut-off line, breaking point, median longitudinal plane of a vehicle

- Optical box, lens, frame and chassis



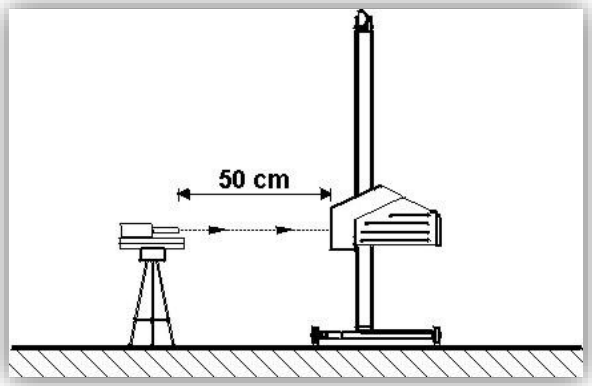


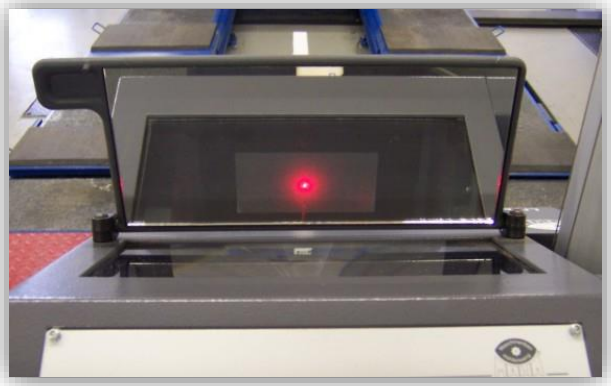
- Control panel, specific electronic and optical equipment

- **Drafting a recommendation for headlight testers**

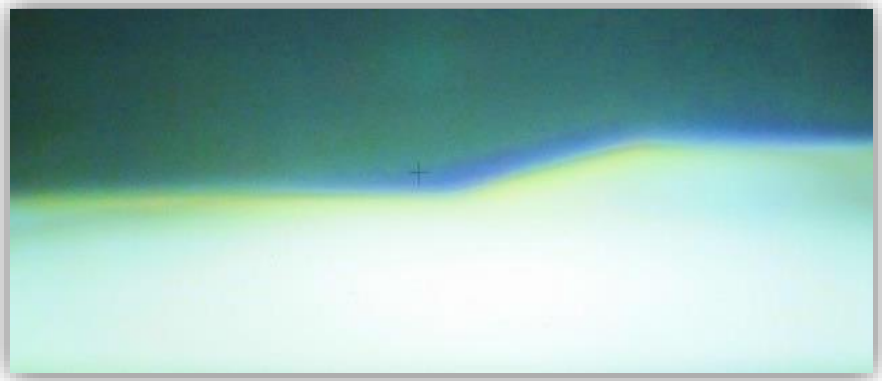
The description should include:

- Calibration of the device





- Measuring the mean position of the cut off line

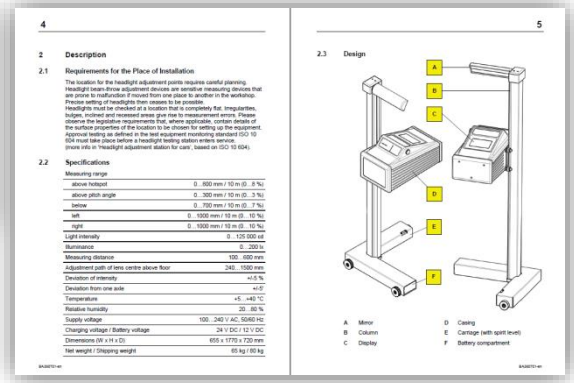


- **Drafting a recommendation for headlight testers**

The description should include:

- Training the staff working at the technical control stations

- Delivery, set up and servicing



- Type approval procedure

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- **Future activities - Outlook**

The following procedure is planned:

- Summary the experience of experts
- Summary the comments to a draft
- Preparation of draft for a CITA-Recommendation “headlight tester”
- Preparation of draft for a CITA-Recommendation “testing area”
- **Adoption of a CITA-Recommendation**

Thank you for your attention!

Workshop C1

Presentation 2

Collection of Data via Crash Data Retrieval

Harald Neumann

Robert Bosch GmbH, Germany

Collection of Data via Crash Data Retrieval

Dr. Harald Neumann – Robert Bosch GmbH

2015 CITA Conference, 14-16th April 2015, Dubai, UAE

BOSCH

What is the Crash Data Retrieval (CDR) Tool?

- What is the CDR Tool?
  - It is used to retrieve EDR (crash) data that is stored in vehicle ECUs such as airbag, powertrain control modules, roll-over sensors and pedestrian protection systems
- What is an EDR (Event Data Recorder)?
  - An EDR is a function inside an ECU (primarily in airbag control modules) that stores key vehicle operating and safety restraint information before, during and after a crash
  - EDR data is stored in flash memory in the ECU
  - Over 90% of the passenger cars and light trucks sold in US are equipped with EDR capability

CDR CRASH DATA RETRIEVAL

What is the Crash Data Retrieval (CDR) Tool?

- What is the data used for?
  - Reconstruction of vehicle accidents for determining fault/causation
  - Validate insurance claims
  - Vehicle safety research (Universities, US Government)
  - Obtaining real-world data from crashes to improve safety systems (OEMs)
  - Usage by OEMs and suppliers to defend their products in litigations

CDR CRASH DATA RETRIEVAL

BOSCH

What vehicles can CDR read data from?

- The following OEM vehicles are supported by the CDR Tool?
  - General Motors (US/Canada/Australia)
  - Ford (US/Canada)
  - FCA (world-wide)
  - Toyota (world-wide)
  - Honda (US/Canada)
  - Nissan (US/Canada)
  - Mazda (US/Canada)
  - Suzuki (US/Canada)
  - BMW (US/Canada)
  - Volvo (world-wide)
  - Mercedes-Benz (US/Canada)
  - Maserati (US/Canada)
  - Audi (US/Canada)
  - Volkswagen (US/Canada)
  - Lamborghini (US/Canada)
  - Bentley (US/Canada)
  - *Others (coming in 2015)*

CDR CRASH DATA RETRIEVAL

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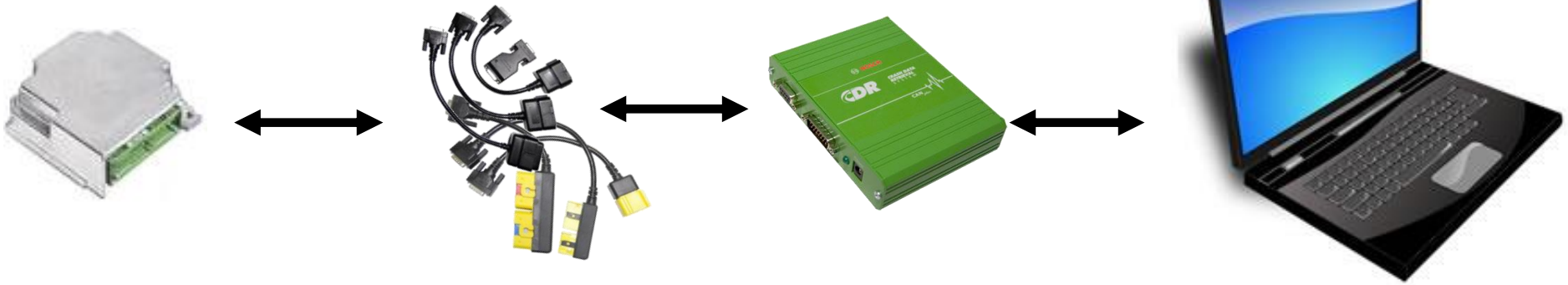
Main System Components



ECU that Stores Crash Data (not a CDR component):

- Airbag Control Module
- Powertrain Control Module and Roll-over Sensor Module
- Stores crash event data

CDR Interface Cables:

- OBDII Interface Cable
- Direct-to-module cables (~26 cables)

CDR Interface Module:

- Vehicle Communications Management
- Vehicle interface protocols
- ECU specific messaging for retrieval of crash data
- Pass thru of crash data from ECU to PC
- PC interface is RS232

PC Application Software:

- User Interface
- Translates raw data from ECU to human readable format and units of measurement
- Issues commands for control of CDR Interface Module to retrieve data from various support ECUs
- Manages firmware reprogramming of the CDR Interface Module

CDR CRASH DATA RETRIEVAL

BOSCH

CDR Process (1/3)

Vehicle connection

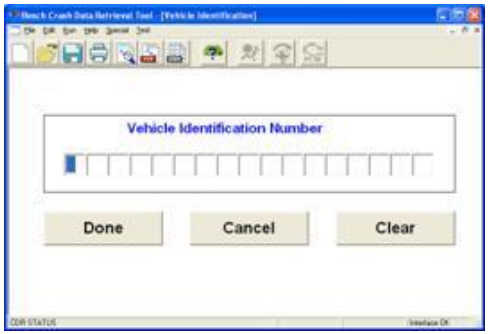
- ➔ User connects CDR tool to the vehicle or directly to the airbag control module
  - vehicle's J1962 (OBD II) connector or
  - directly to the airbag control module using one of the 60+ cables and adapters

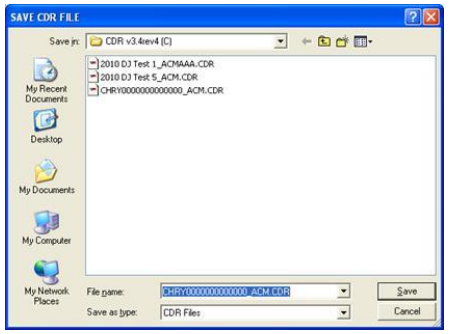
BOSCH

CDR Process (2/3)

Data imaging

- At first the CDR product establishes communications with the vehicle and then reads the crash data 3 times ensuring data integrity during retrieval
- The raw, un-translated EDR data is saved to a CDR file (secured) on the PC





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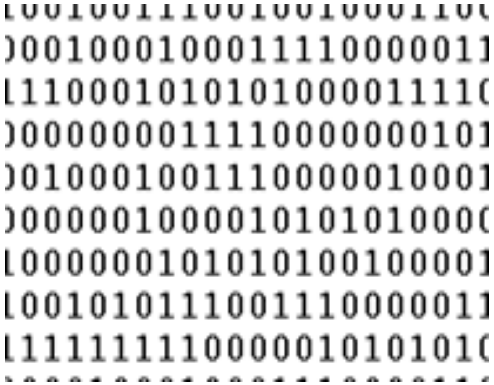
CDR Process (3/3)

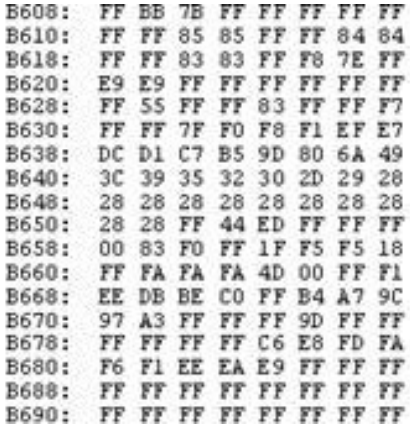
Translating the Data

- The raw data is translated only during view mode of the application
- The CDR application contains the translations to turn machine readable raw data to human readable form

Binary CDR file



Translated to hex



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B608:  FF BB 7B FF FF FF FF FF
B610:  FF FF 85 85 FF FF 84 84
B618:  FF FF 83 83 FF F8 7E FF
B620:  E9 E9 FF FF FF FF FF FF
B628:  FF 55 FF FF 83 FF FF F7
B630:  FF FF 7F F0 F8 F1 EF E7
B638:  DC D1 C7 B5 9D 80 6A 49
B640:  3C 39 35 32 30 2D 29 28
B648:  28 28 28 28 28 28 28 28
B650:  28 28 FF 44 ED FF FF FF
B658:  00 83 F0 FF 1F F5 F5 18
B660:  FF FA FA FA 4D 00 FF F1
B668:  EE DB BE C0 FF B4 A7 9C
B670:  97 A3 FF FF FF 9D FF FF
B678:  FF FF FF FF C6 E8 FD FA
B680:  F6 F1 EE EA E9 FF FF FF
B688:  FF FF FF FF FF FF FF FF
B690:  FF FF FF FF FF FF FF FF
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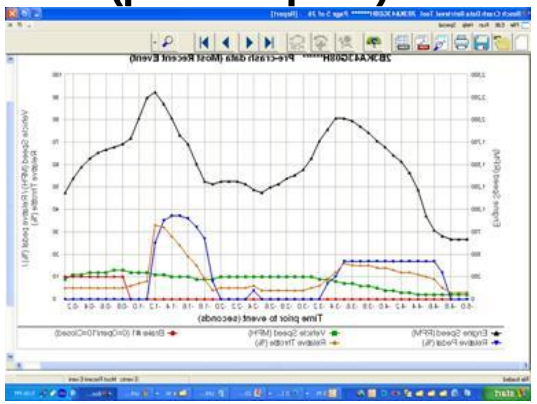
Translated to human readable form (per OE specs)



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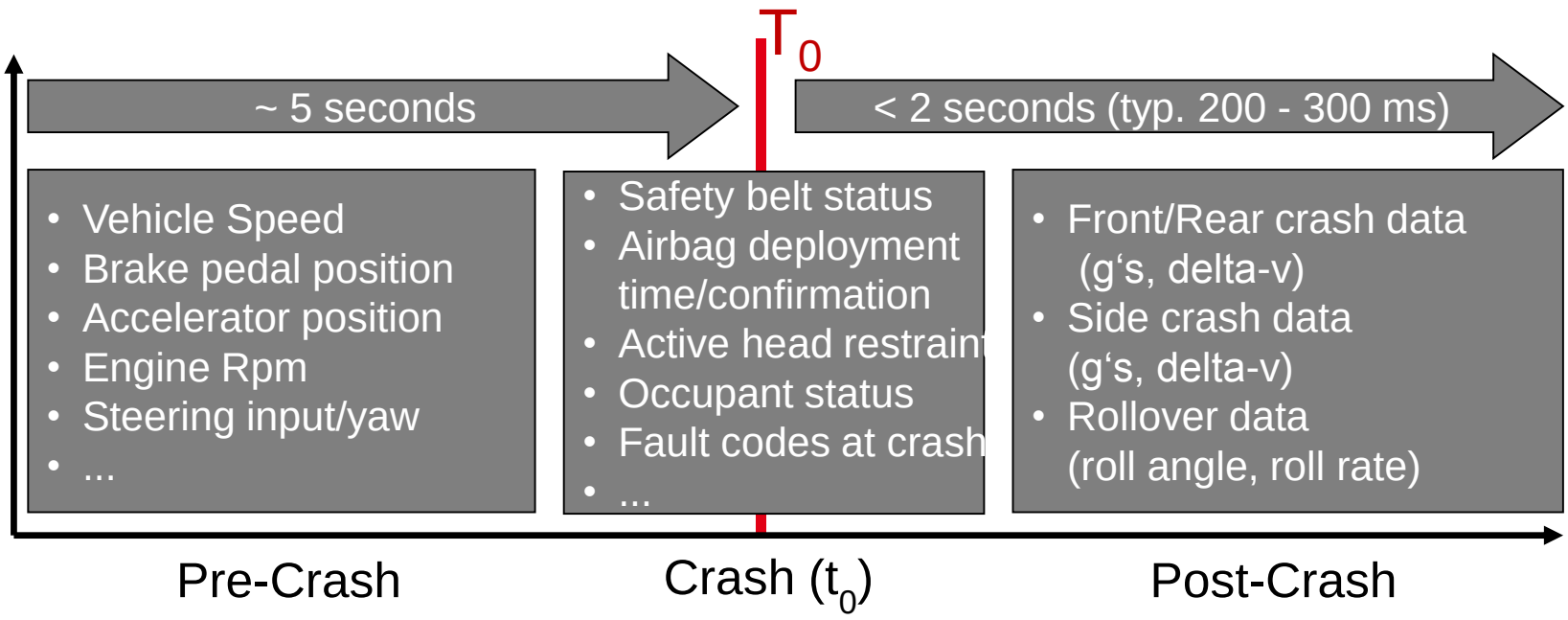
What kind of data can be retrieved (Examples)?



- An EDR can typically record 2 to 6 events
- EDR data recording can be triggered by either deployment of one or more airbags or simply wakeup of deployment algorithm (non-deployment)

Event and crash data differ mainly by time and type (static vs. dynamic data)

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What is Driving the Market?

- US Government Regulation CFR 49 Part 563 (voluntary) September 2012
  - All passenger cars and light trucks sold in the US must comply with the new regulation if equipped with EDR
- US Government Regulation MVSS405 (mandatory) – not yet a law
  - All passenger cars and light trucks sold in the US must be equipped with an EDR in near future (timing is to be determined)
- Korea: On February 21, 2014, Korean Government (MOLIT) has published for Event Data Recorder requirements, KMVSS 56-2. This standard is based on USA regulation. Goes into effect December, 2015

CDR CRASH DATA RETRIEVAL

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Who purchases CDR Systems/needs the data

- OEMs (Audi, BMW, Volkswagen, Chrysler, Ford, General Motors, Honda, Toyota, etc.)
- Law Enforcement Agencies
- Independent Accident Investigators
- Government Agencies
  - NHTSA (National Highway Traffic Safety Administration)
  - NTSB (National Transportation Safety Board)
- Fleet owners
- Insurance Companies
- Vehicle crash testing facilities

CDR CRASH DATA RETRIEVAL

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Where is it sold and who sells it?

USA and Canada

Crash Data Group
www.cdr-system.com

Africa

IbB Engineering GmbH
www.ibb-engineering.org

Australia and New Zealand

Bosch Diagnostics
www.bosch.com.au

Europe and Middle East

asDARTS InH. Andreas Huber
www.asDARTS.com

IbB Engineering GmbH
www.ibb-engineering.org

CDR CRASH DATA RETRIEVAL

BOSCH

What is the Bosch CDR System?

- The CDR system contains:
  - Vehicle Interface Module
  - Direct to Module CDR Cables
  - Software
- For more information visit:
  - www.boschdiagnostics.com
  - www.cdr-system.com

CDR CRASH DATA RETRIEVAL

BOSCH

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Workshop C1

Presentation 3

Improving PTI: Suspension Test, 2 & 3 Wheelers and Communications Protocols

Jordi Brunet

VTEQ, Spain

Improving PTI:

Suspension Test
Two and three wheelers
Communication protocols

CITA 2015 Conference - DUBAI

Improving PTI:

SUSPENSION TESTING

TWO AND THREE WHEELERS

COMMUNICATION PROTOCOLS

Current situation

- The suspension system plays an important role in the safety drivability of a vehicle
- To maintain the system in correct safety conditions it is necessary to know its performance during the life of the vehicle
- The brake system has an objective check method and validation criteria, regulated by a CE directive that must be met for approval of the vehicle in order to determine the system effectiveness

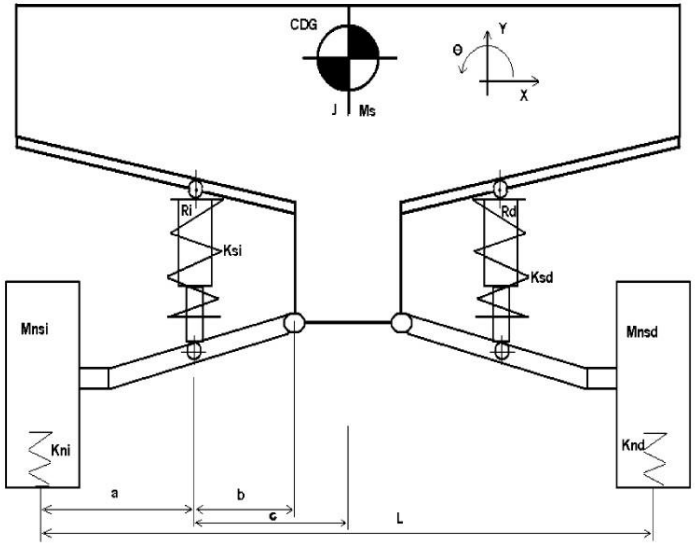
Current situation

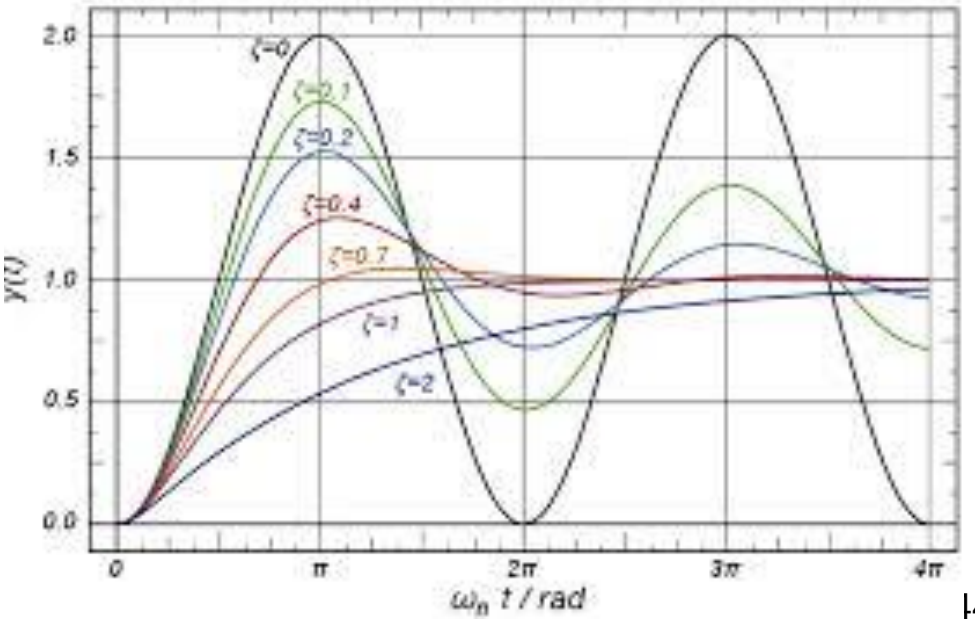
- To test the suspension, a vibrating platform test bench is currently being used, but the test method and validation criteria are not reliable at the present
- Two main systems coexisting in PTIs
  - Force measuring based systems
  - Displacement measure based systems
- In both cases the result of the test is based in a criteria in function of the maximum amplitude (resonance) in relation with the static value, expressed in percentage
- Both the test method and validation criteria are inadequate and can lead to results that may be false

New suspension measuring system (Damping coefficient)

- The procedure is to determine the damping coefficient of the suspension system.

- The damping coefficient, defined as the quotient of system damping and critical damping (damping with no oscillating movement)





New suspension measuring system (Damping coefficient)

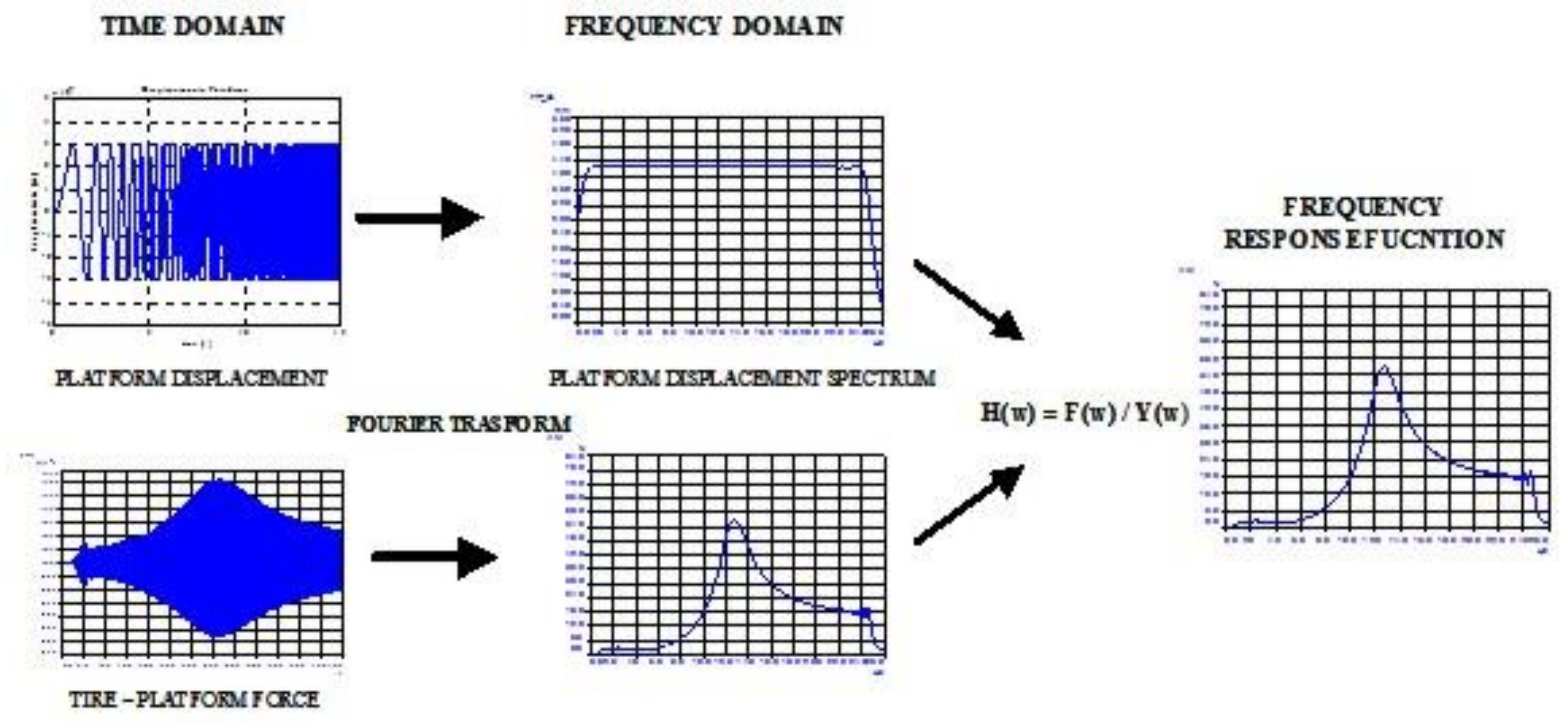
- To get the correct measurement is needed to excite the system with enough frequency broadband and energy

- Based on current Eusama bench. Following modifications have been made:

  - Excitation starting frequency has been decreased from 25Hz to 4 Hz
  - Excitation run has been increased from 6 to 25mm
  - Flywheel has been substituted by inverters to command the frequency slope down ramp (0.1Hz/s)
  - The platform-tire force has been measured
  - A new signal processing has been designed

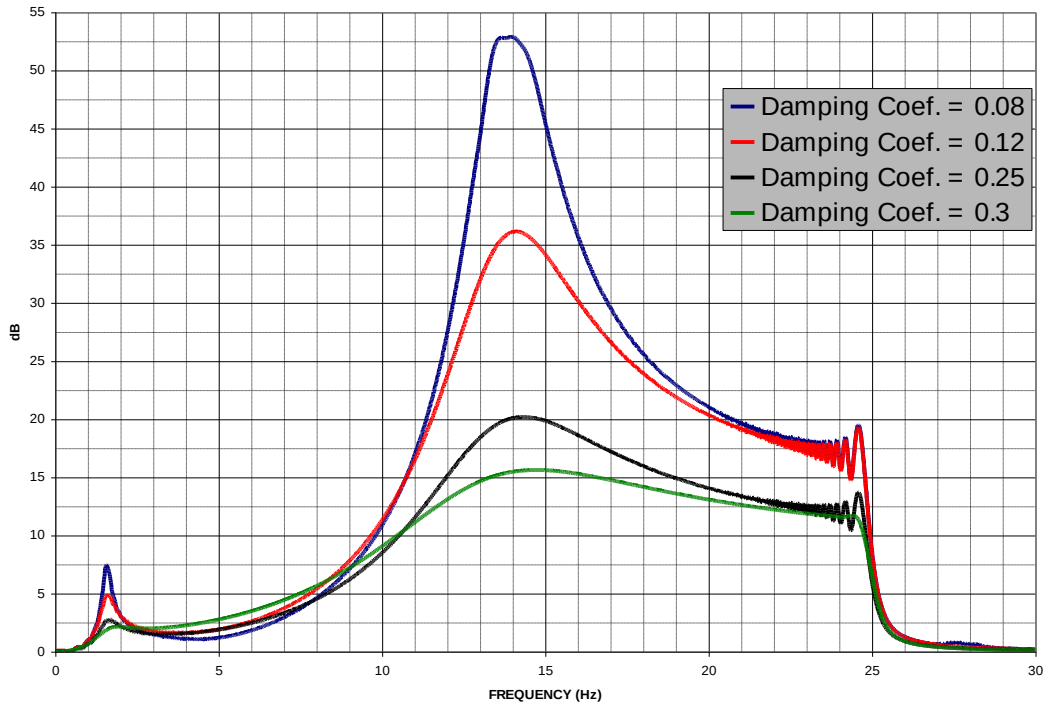
New suspension measuring system (Damping coefficient)

- The measured tire-platform force signal has been transformed to frequency domain through Fourier Transformer in order to obtain the Frequency Response Function (FRF)

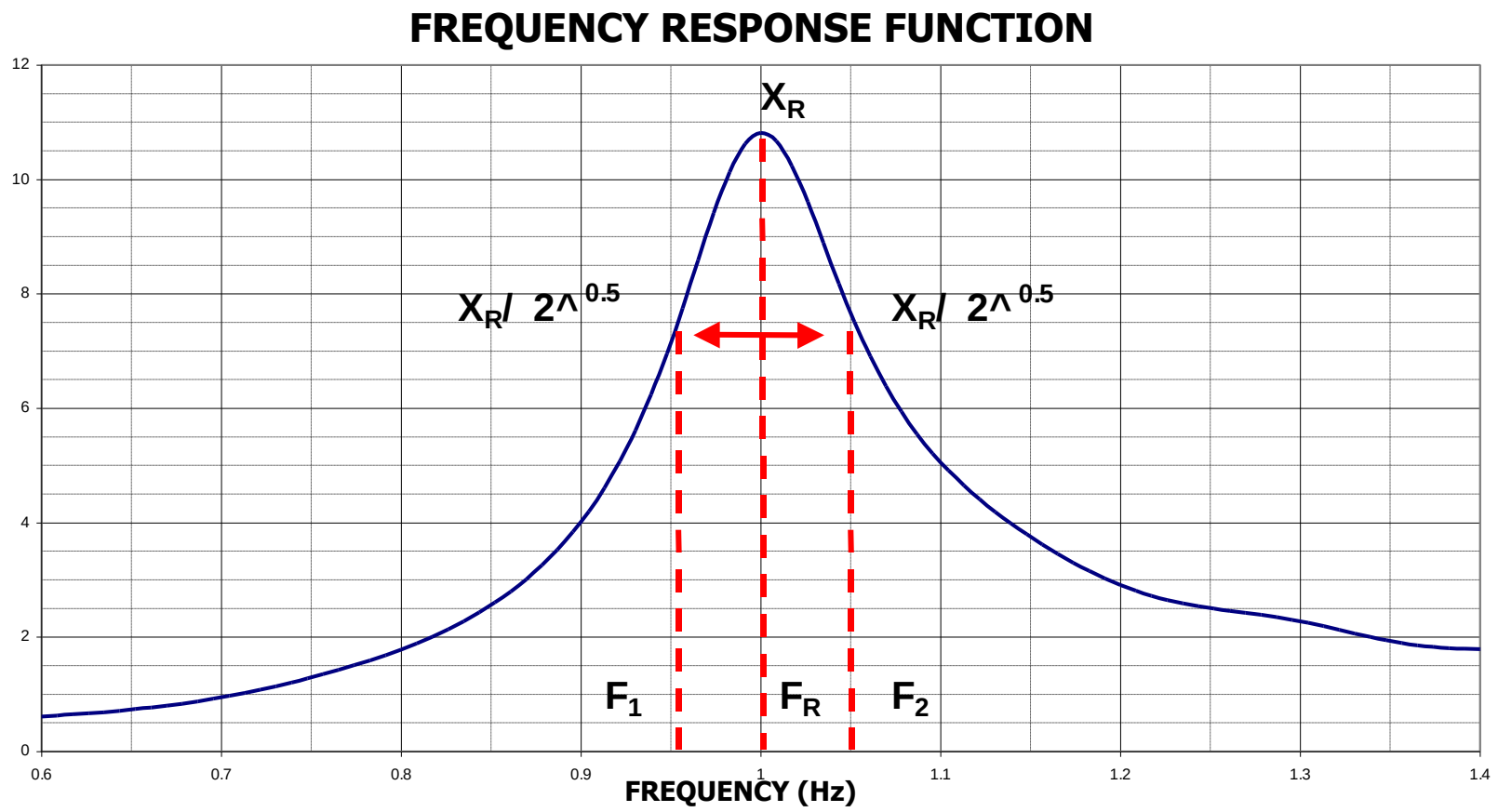


New suspension measuring system (Damping coefficient)

- When Damping Coefficient changes the sprung resonance peak shape varies significantly
- It allows to determining shock absorber damping coefficient



New suspension measuring system (Damping coefficient)



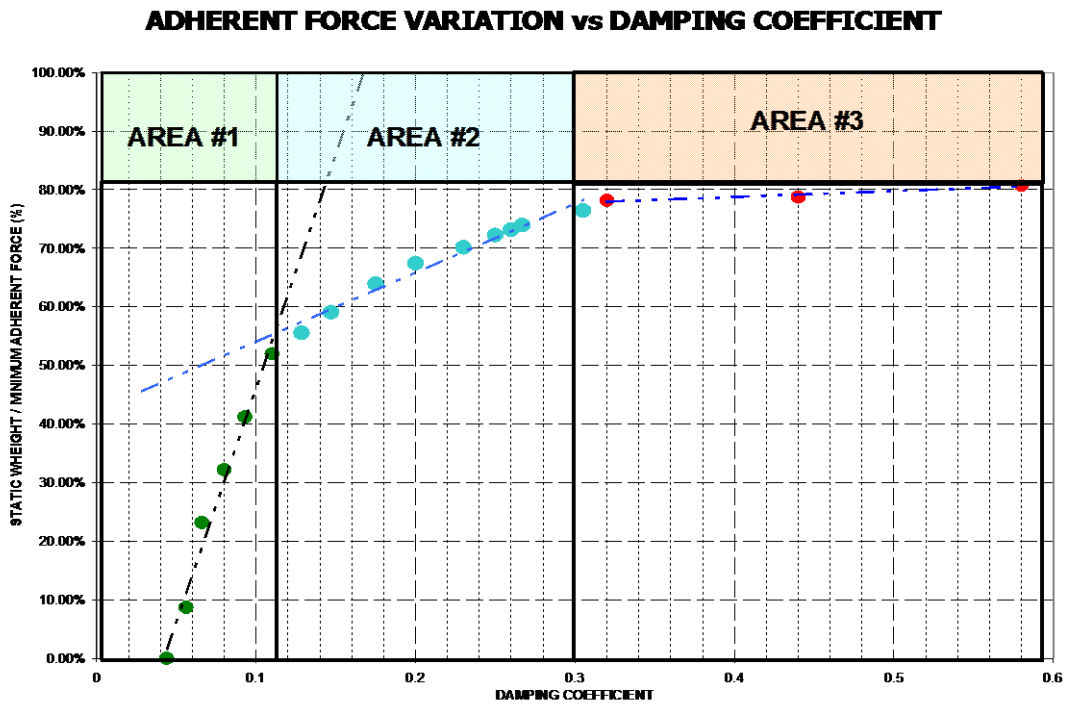
New suspension measuring system (Damping coefficient)

- This value could be estimated from the shape of the Resonance Peak on FRF.
- The Frequency (FR) and Amplitude (XR) value on the resonance peak is obtained.
- After the frequencies F1 & F2 have been determined by measuring the amplitude values that reduce half power from resonance peak.

$$\xi = \frac{(2*\pi*F_2)^2 - (2*\pi*F_1)^2}{4*(2*\pi*F_R)^2} \qquad \xi = \frac{C}{C_{critical}}$$

New suspension measuring system (Damping coefficient)

- Using as analysis parameters:
  - Minimum adherent force measured between tire and platform (time domain) called “Fad”
  - Damping coefficient measured by the method above indicated called “ξ”



New suspension measuring system (Damping coefficient)

- Observing the behaviour of these parameters three different areas have been found:
  - Area #3. Corresponding with values of ξ >0.3. In this area variation of ξ do not modify significantly the value of Fad.
  - Area # 2. Corresponding to values between $0.2 < \xi < 0.3$. In this area Fad varies significantly when ξ is modified.
  - Area # 1. Corresponding to values $0.15 < \xi$. In this area loss of Fad when ξ changes is very significant. Little variation of ξ involves an important reduction of Force transmission capacity from tire to road.

New suspension measuring system (Damping coefficient)

- Using a different vehicle configuration, the inflection point between “Area #1” to “Area #2” maintains very similar values.

- This fact allows us to establish a minimum damping factor below which, suspension system performance decreases significantly and driving safety could be seriously affected.

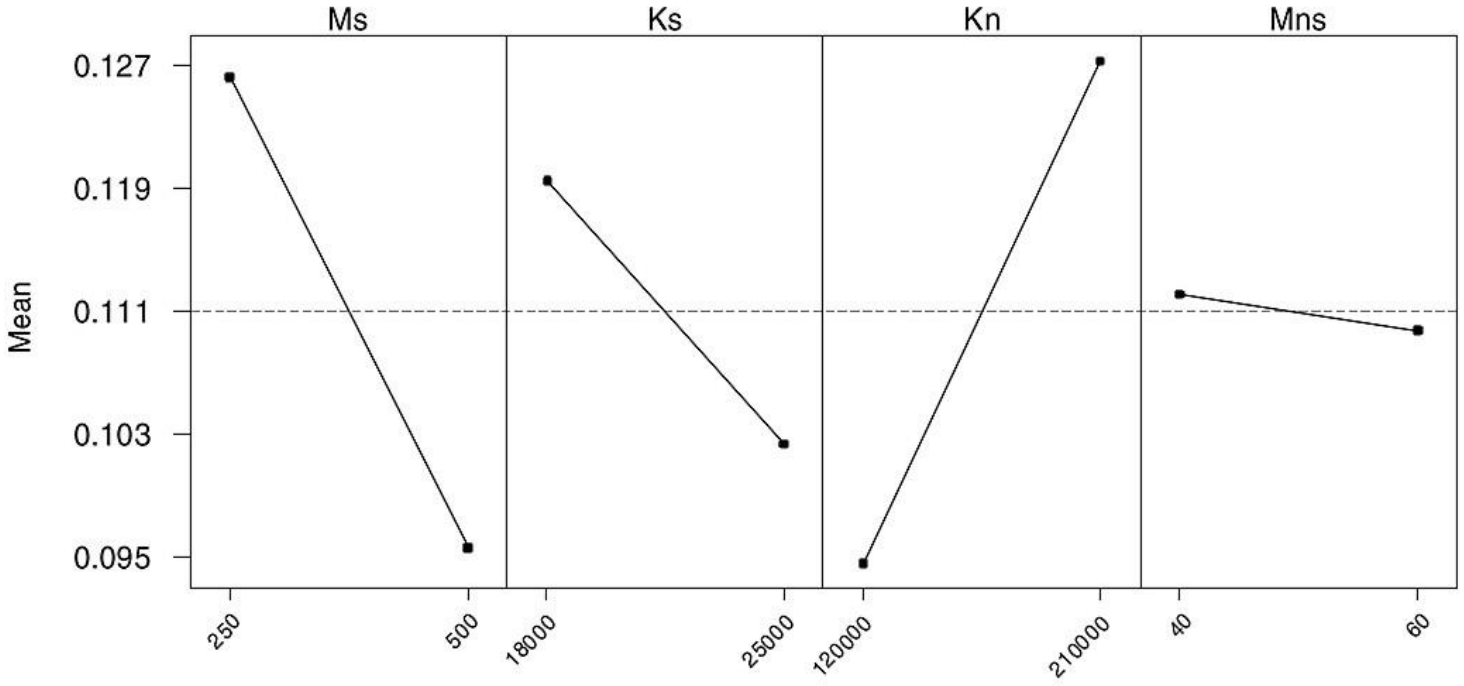
It will be called: “Limit Damping Coefficient” (ξ lim)

It is the damping coefficient value that produces the change from Area #1 to Area #2.

$$\xi Limit = 0.12$$

New suspension measuring system (Damping coefficient)

- Through a Taguichi experiment design, we can study the influence of different design parameters

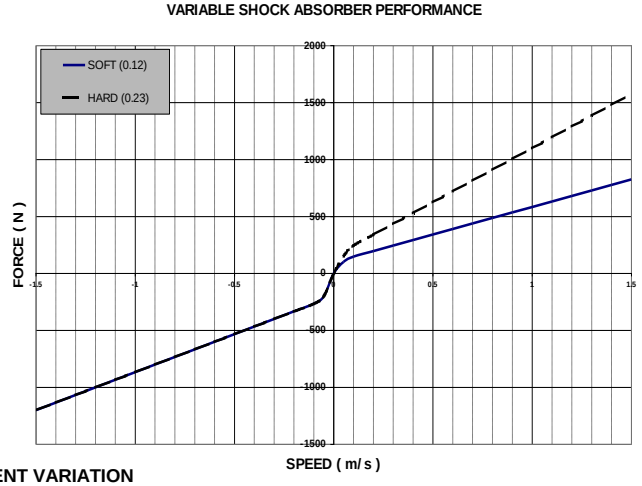


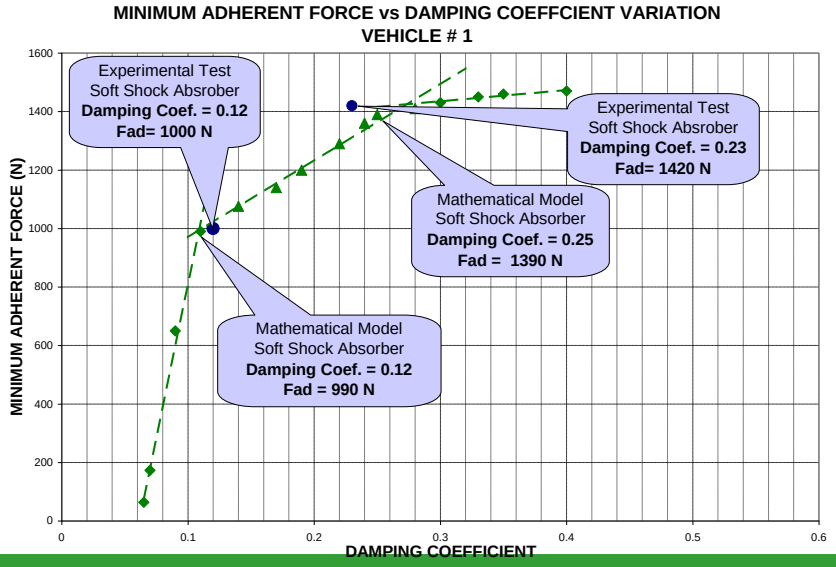
Ms→Sprung Mass(kg) Ks→Suspension stiffness(N/m) Kn → Tyre stiffness (N/m) Msn → Unsprung mass (kg)

Experimental tests

- Model based results have been verified by experimental tests.
- Using:
  - A prototype of vibrating platform test bench
  - A vehicle equipped with variable shock absorbers

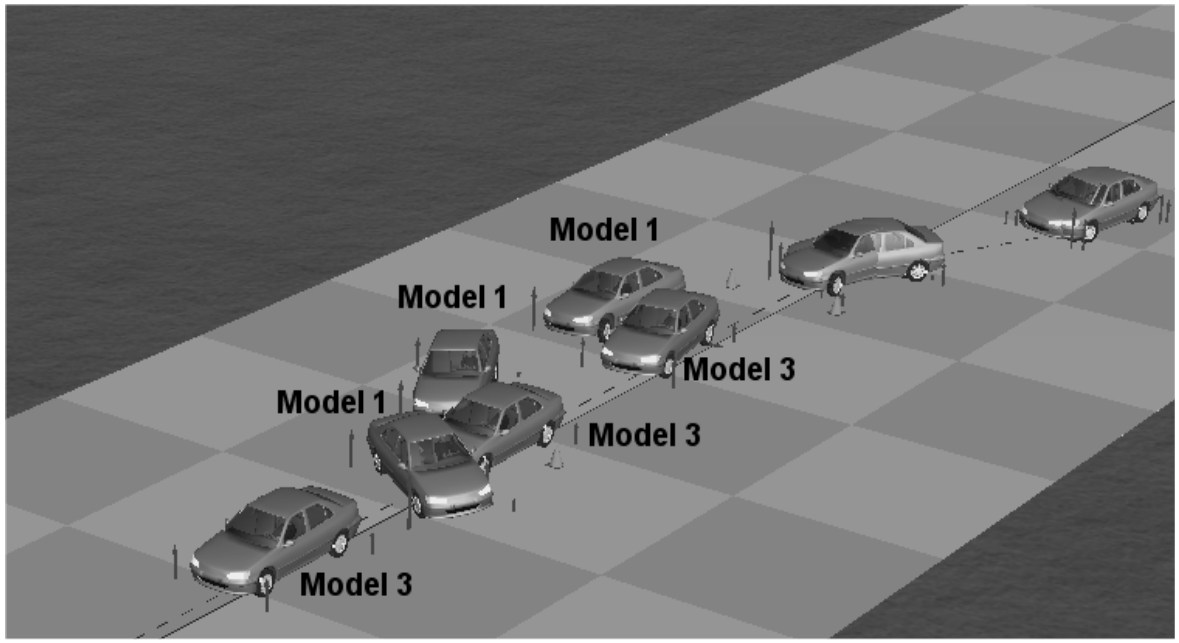
Experimental tests





Experimental tests

- Lost of vehicle performance under “Limit damping Coefficient” has been confirmed by model based simulation (CarSim)



Experimental tests

- Vehicle lateral stability
  - Through an ISO double line change test
    - Reduce the overturn speed from 110 km/h (shock absorber in good condition) to 100 km/h (shock absorber under “Limit Damping Coefficient”)

- Vehicle longitudinal performance
  - Through a Directive 98/12 CEE brake test
    - Increase the brake distance from 77m (shock absorber in good condition) to 92m (shock absorber under “Limit Damping Coefficient”)
    - Test performed at rough road

Conclusions

- Suspension system status can be achieved by vibrating platform test bench
- Characterizing dynamic behaviour of suspension system in vibrating test bench is sufficient to excite sprung mass resonance
- Through FRF it is possible to determine the damping coefficient of the shock absorber
- A “Limit Damping Coefficient” as a validation criteria has been established, below which dynamic behaviour of vehicle demonstrates outstanding loss of performance.
- Computer model results have been confirmed by experimental test with enough accuracy

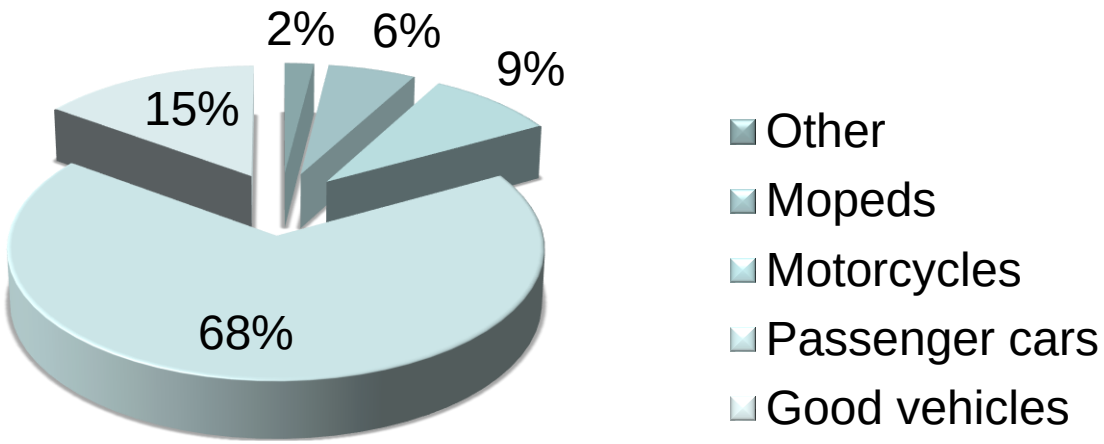
TWO AND THREE WHEELERS

WHAT'S THE INFLUENCE ON ROAD SAFETY BY INCLUDING TWO AND THREE WHEELERS IN PTI?

LET'S SEE A REAL CASE: SPAIN

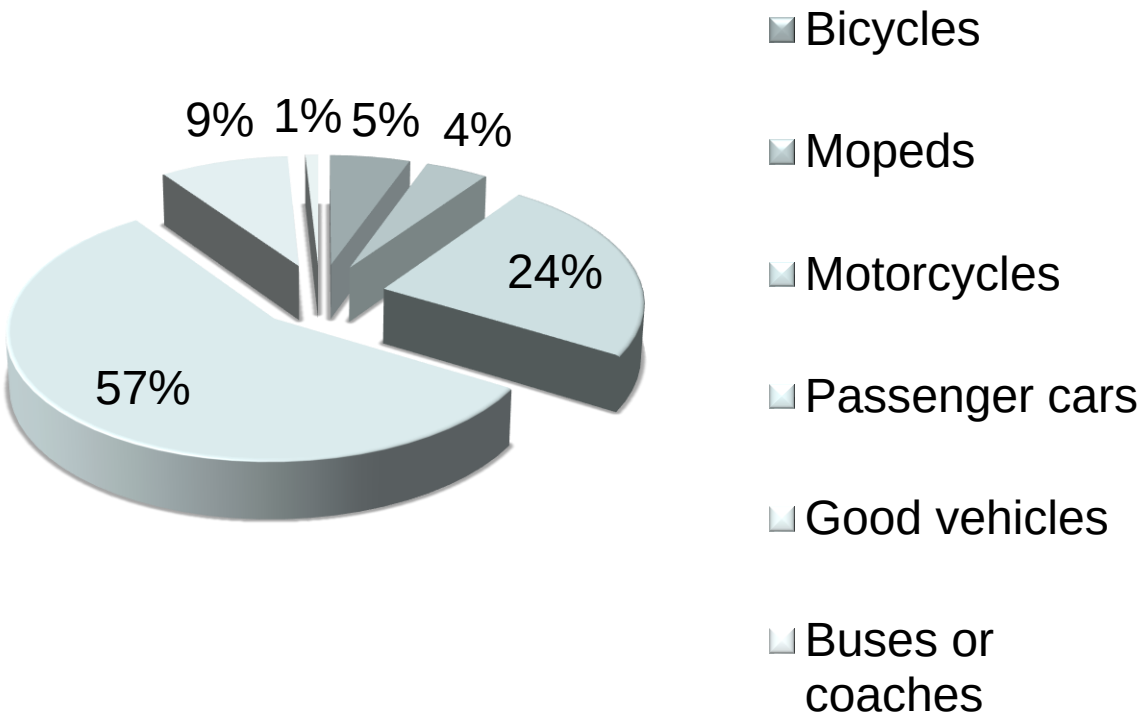
TWO AND THREE WHEELERS

Vehicle fleet in Spain 2013 (DGT)



TWO AND THREE WHEELERS

Fatalities in 2013 by type of vehicle (Spain) (DGT)



TWO AND THREE WHEELERS

Mopeds+motorcyles represent 15,9% but the fatalities represent 28,2%

TWO AND THREE WHEELERS

Motorcycles	Mopeds
	
1st Inspection	1st Inspection
Before 4th year	Before 3rd year
Successive Inspections	Successive Inspections
Every 2nd year	Every 2nd year

TWO AND THREE WHEELERS

Estimation of avoided accidents (AA) (Spain)

	INSP.	RR %	AV	F/AV	I/AV	AA	AI	AD	COST
Motorcycles and Mopeds	**847.348**	**18,01**	**26.662**	**15,83**	**1.045,83**	**2.881**	**3.013**	**46**	**70,84**

- INSP: Number of performed inspections (Source MINETUR)
- RR (%): Rejection Rate in %.
- AV: Accidents with victims (Source DGT)
- F/AV: Fatalities per 1.000 Accidents with victims (Source DGT)
- I/AV: Injuries per 1.000 Accidents with victims (Source DGT)
- AA: Avoided accidents due to PTI.
- AI: Avoided Injuries due to PTI.
- AD: Avoided deceases due to PTI
- COST: Economic evaluation of avoided accidents in M€ (Fuente: Informe FITSA El Valor de la Seguridad Vial).

Unitary Human Costs: **857.648** euros in the case of a fatality and about **10.419** euros in the case of an injured

TWO AND THREE WHEELERS

Even with an absenteeism of 60%, the testing of 2 and 3 wheelers represent 27% of the estimated Total Cost Saving of the PTI in Spain

COMMUNICATION PROTOCOLS

EGEA (European Garage Equipment Association) WG10

Creation of a European Vehicle Test Equipment Network

Meetings started in 2013

COMMUNICATION PROTOCOLS

EGEA WG10 is a team of experts in PTI and networking, coming from different companies and working together on the definition of a standard communication protocol and data exchange format, with the following goals:

- Plug & play functionality of vehicle test equipment in PTI test centres, workshops
- Public specifications and conformance / validation tools;
- Non-profit, non-discriminatory basis;
- Single pan-European solution, leveraging existing PTI implementations;
- Align with the goals of the EU Commission's roadworthiness package – in particular the generation and secure transmission of harmonised electronic test certificates facilitating the cross-verification of PTI results for improved environment and road safety.
- WG10 will work in coordination with the EU Commission and with the organization delivering the tender for Article 15 on the "Vehicle Information Platform" (UNISYS).
- EGEA is in the best position to define a solution that is good for the industry (vehicle test equipment manufacturers, test centres, vehicle manufacturers) in terms of implementation costs, risks and times.

COMMUNICATION PROTOCOLS

- **Interface PTI and possibly other garage equipment to Data Management Systems and other players in the network using <u>one common standard</u>**

- **Plug & play garage equipment independently of manufacturer**

COMMUNICATION PROTOCOLS

What is required for a PTI network
Example feature list (1/2):

- Performance
- Robustness (fail safe)
- Configurability (national procedures, different test equipment)
- Extendable through configuration without software development
- Integrity and authenticity of data and configuration (e.g. Welmec 7.2)
- Privacy (vehicles, owners, test results)
- Asynchronous operation (local operation possible even if network is down)
- Open source (non proprietary, license free)
- Support of embedded systems (including Linux, iOS, Android)

COMMUNICATION PROTOCOLS

What is required for a PTI network
Example feature list (2/2):

- Plug & play (interchangeability of equipment)
- Independent from physical layer (e.g. USB, Ethernet, WiFi, BT)
- Support of contents in different languages
- Protocol definitions (e.g. keywords) in English
- Standard file format for reports
- Defined conformance test plan
- Support of all vehicle categories (LDV, HDV, 2-3 wheelers, quads, …)

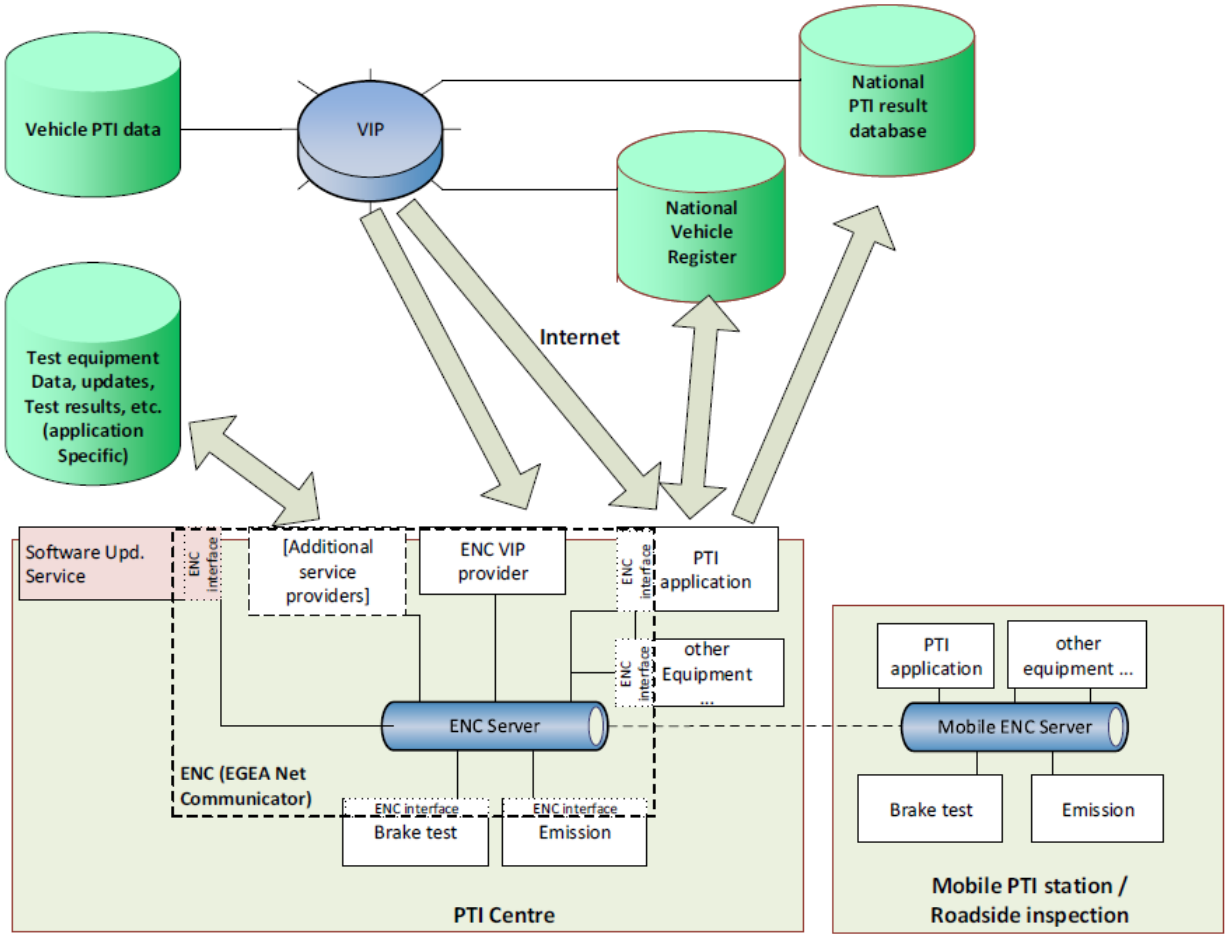
COMMUNICATION PROTOCOLS

Start from existing networks and experience in national PTI implementations

- Re-use good concepts that have worked well
- Don’t repeat errors
- Consider backward compatibility with existing software (e.g. translation layer between new and existing networks)

- MCTC-NET2
  http://www.mit.gov.it/mit/site.php?p=cm&o=vd&f=cl&id_cat_org=28&id=651
- ASANET
  http://www.asanetwork.de/index.php/homepage.html
- OTC-LAN
  http://www.utac-otc.com/fr/ctvl/base_doc.asp?idCategDoc=204
- iShop
  http://www.aftermarket.org/Technology/iShop

COMMUNICATION PROTOCOLS



Thank you!

Workshop C1

Presentation 4

Innovative Project for Improving Road Safety & Pollution Conditions in developing Countries

Yannick Le Guevellou

Technology Director, ACTIA MÜLLER, France

CITA DUBAI – 2015

YANNICK LE GUEVELLOU

ACTIA®
ACTIA MULLER

INNOVATIVE PROJECT FOR IMPROVING ROAD SAFETY & POLLUTION CONDITIONS IN DEVELOPING COUNTRIES

THE 2 MAIN OBJECTIVES OF OUR APPROACH

ACTIA®
ACTIA MULLER

OUR 1ST OBJECTIVE: ROAD WORTHINESS ENFORCEMENT

EXPECTED RESULT: ZERO CASUALTIES FOR OVERWEIGHT OR DEFECTS OF GOODS & PUBLIC TRANSPORT VEHICLES

OUR 2ND OBJECTIVE: REDUCE POLLUTION

EXPECTED RESULT: SIGNIFICANT REDUCTION OF THE EMISSIONS OF GOODS & PUBLIC TRANSPORT VEHICLES WITHIN THE FOLLOWING 5 YEARS OF THE IMPLEMENTATION OF THE PROJECT

CHANGE THE FEELING OF THE PUBLIC !

TAX PERCEPTION vs CIVIL PROTECTION

OUR 1ST OBJECTIVE: ENFORCING ROAD WORTHINESS

ACTIA®
ACTIA MULLER

OUR 2ND OBJECTIVE: REDUCING POLLUTION

ACTIA®
ACTIA MULLER

TEST: EMISSIONS

Many parameters affect the emissions of a vehicle: overweight, improper combustion, defects in emissions system...
These vehicles represent a global health danger; and not only for the road users but for everyone living in the area.

"*Blood perfuses all of the body's organs and can carry toxic substances as well as beneficial substances, such as oxygen, to them. Air pollution is the source of many materials that may enter the human bloodstream through the nose, mouth, skin, and the digestive tract, containing chemicals known to be harmful, such as benzene, lead and other heavy metals, carbon monoxide, volatile nitrites, pesticides, and herbicides. These substances have been shown to produce harmful effects on the blood, bone marrow, spleen, and lymph nodes.*"

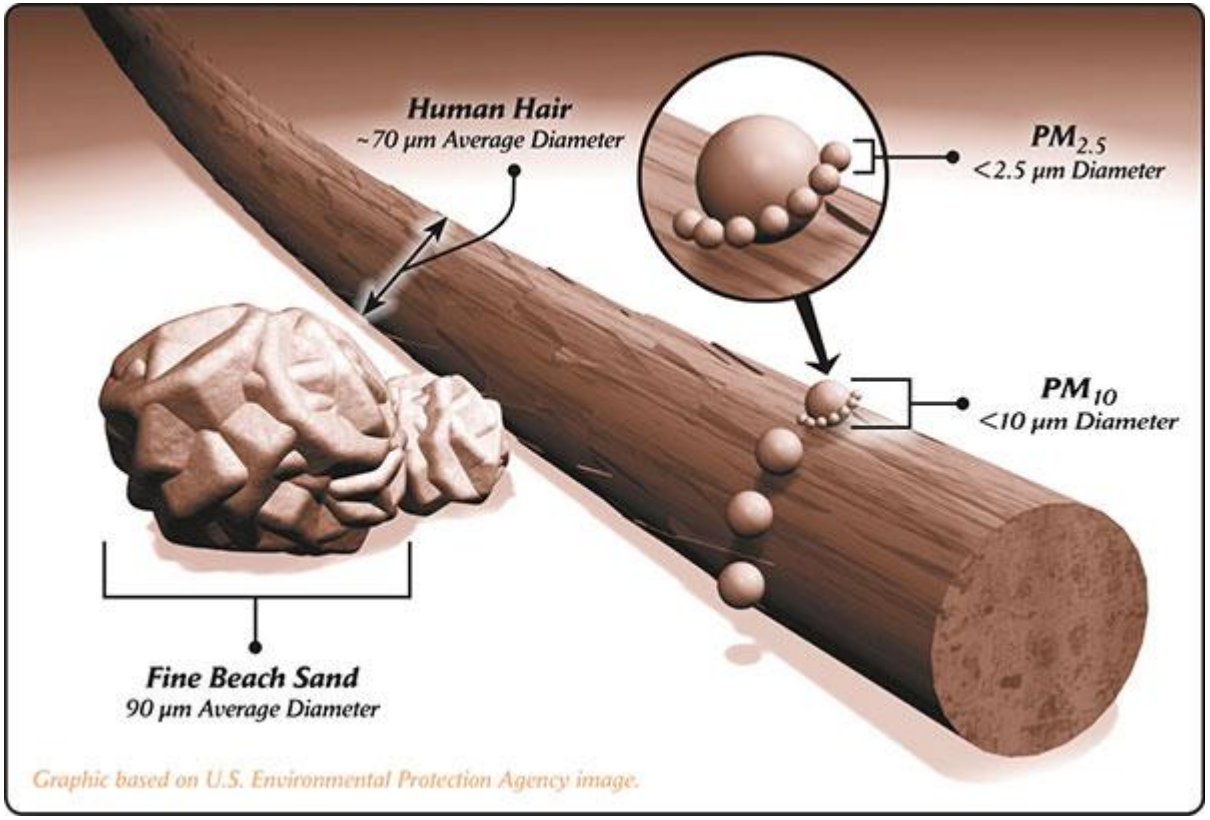
Conclusions of the first-ever conference on "Air Pollution: Impacts on Body Organs and Systems" held in Washington on November 18th, 1994.

Nowadays, motor vehicles manufacturers are required to meet increasingly stringent pollution control standards. Vehicles that are not properly maintained or that have malfunctioning emission control systems often exceed these standards. Vehicle emissions testing is designed to identify such vehicles in order to make necessary repairs to reduce emissions below the applicable pollution control standards. Identifying and repairing these vehicles will reduce ozone precursor emissions. These repairs also improve the vehicle's performance and fuel economy.

FINE PARTICLES : WHAT ARE WE TALKING ABOUT ?

ACTIA MULLER

Diesel Particulate Matter (DPM), sometimes also called Diesel Exhaust Particles (DEP), is the particulate component of diesel exhaust, which includes diesel soot and aerosols such as ash particulates, metallic abrasion particles, sulfates, and silicates. When released into the atmosphere, DPM can take the form of individual particles or chain aggregates, with most in the invisible sub-micrometer range of 100 nanometers, also known as ultrafine particles (UFP) or PM0.1.



SOLUTIONS TO BE IMPLEMENTED IN THE SCOPE OF THE PROJECT

OUR 2 POSSIBLE IMPLEMENTATIONS - DESCRIPTION

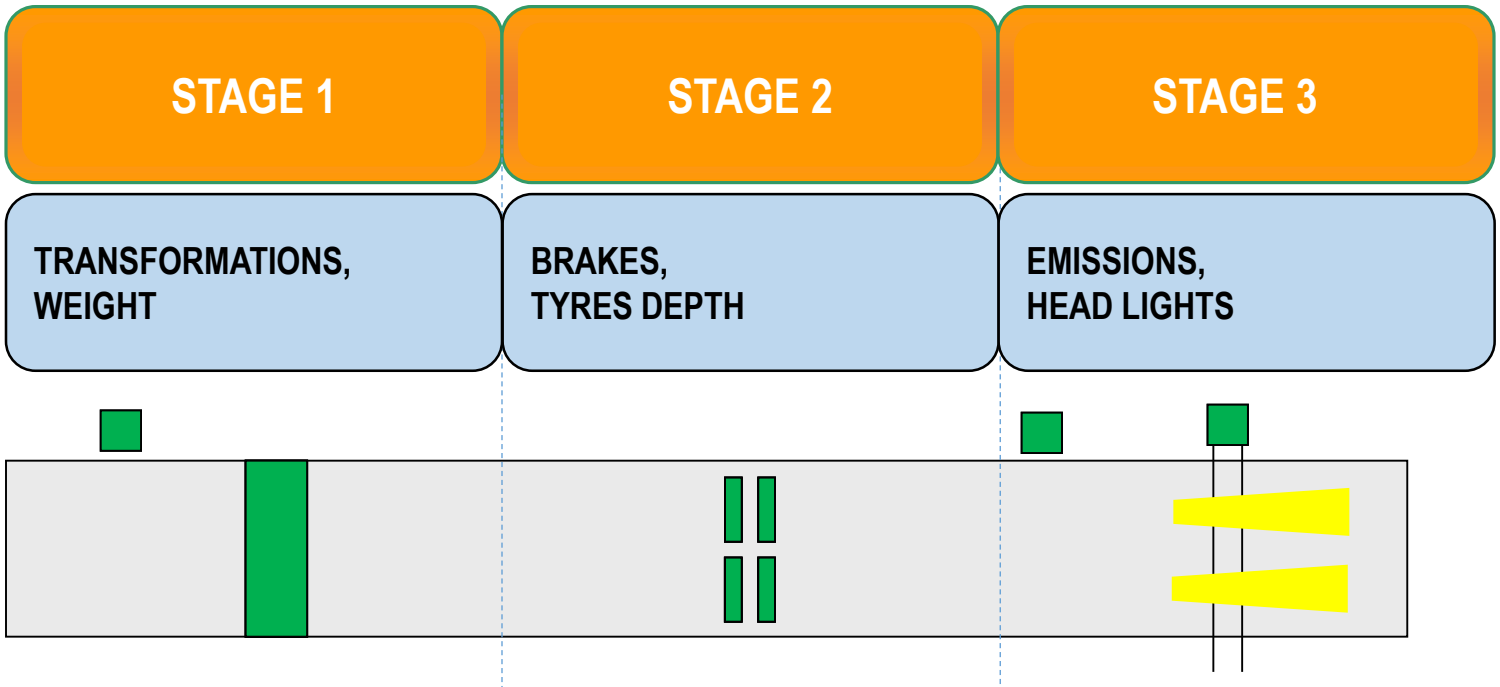
1ST IMPLEMENTATION: MOBILE STATIONS FOR ROAD BORDER ENFORCEMENT

DESCRIPTION: HUMAN OPERATED INSPECTIONS (AUTHORITIES), DIVERSION OF SUSPICIOUS GOODS & PUBLIC TRANSPORT VEHICLES ON AN ALTERNATIVE LANE.

THE SUSPICIOUS VEHICLE IS VOLONTARILY STOPPED BY THE AUTHORITIES, THEN THE AUTHORITIES MAY PERFORMED THE FOLLOWING 6 TESTS:

WEIGHT, BRAKES, TYRES, LIGHTS, TRANSFORMATIONS, EMISSIONS

MOBILE STATIONS



OUR 2 POSSIBLE IMPLEMENTATIONS - DESCRIPTION

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WEIGHT, BRAKES, TYRES, LIGHTS, TRANSFORMATIONS, EMISSIONS

2ND IMPLEMENTATION: ON ROAD TESTS DEVICES AT KEY LOCATIONS

DESCRIPTION: AUTOMATIC & DISCRETE INSPECTION OF GOODS & PUBLIC TRANSPORT VEHICLES AT MANDATORY PASSAGE IN TOLLS AND/OR FRONTIERS POSTS.

FOR THIS IMPLEMENTATION, WE NEED AUTOMATIC & DISCRETE TESTS DEVICES, WITH NO HUMAN ACTION REQUIRED, SO THE FOLLOWING 3 TESTS MAY BE PERFORMED WHEN THE VEHICLE STOPS AT THE TOLL OR WHEN IT JUST PASSES ON THE ROAD.

WEIGHT, TYRES, EMISSIONS

ON ROADS / TOLLS OR FRONTIERS POSTS

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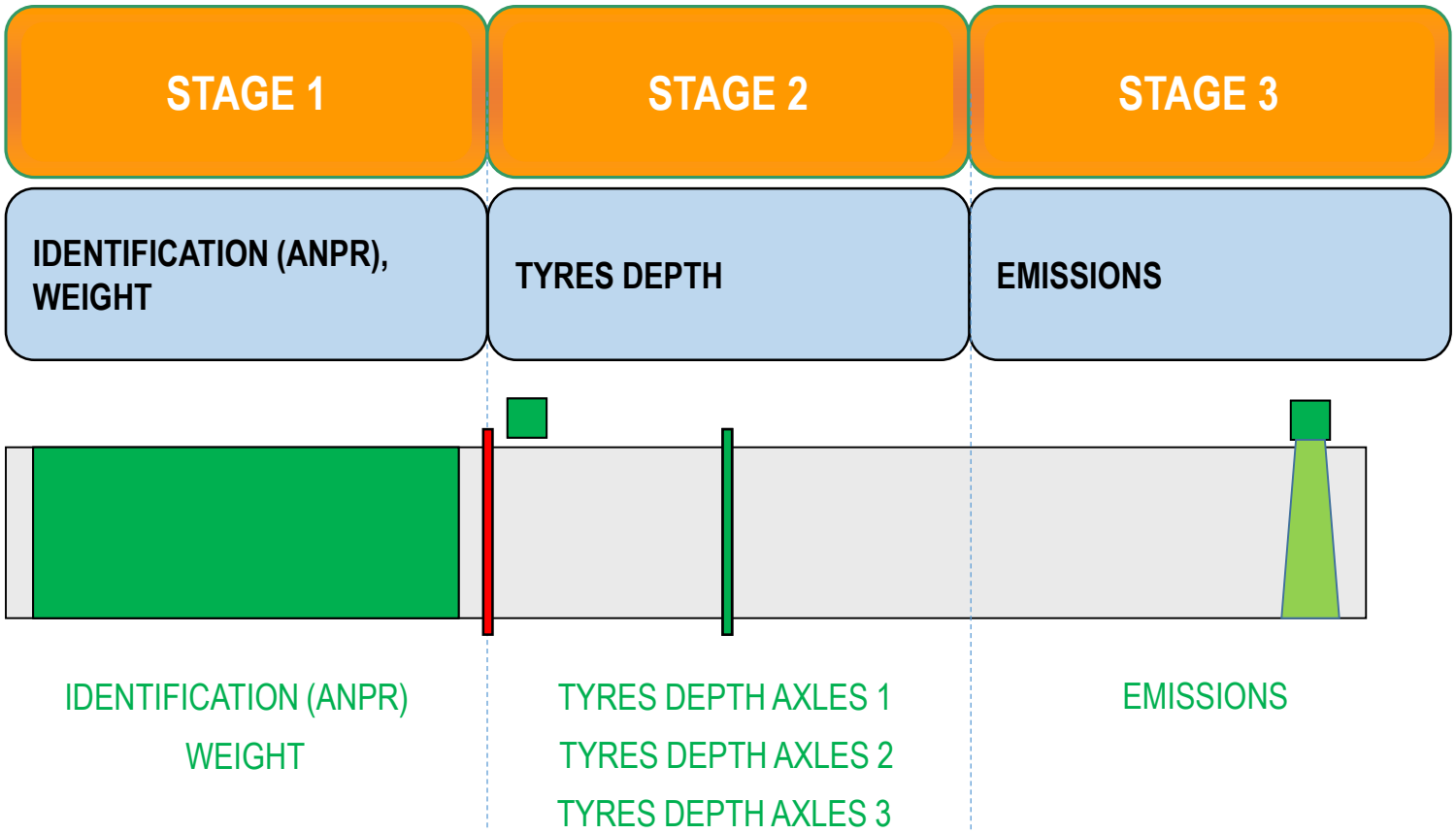

OUR 2 POSSIBLE IMPLEMENTATIONS - COMPARISON

IMPLEMENTATION	ADVANTAGE(S)	DISADVANTAGE(S)
MOBILE STATIONS	- THE AUTHORITIES ARE PRESENT DURING THE TESTS OF THE VEHICLE. - ALL THE TESTS CAN BE PERFORMED.	- NEED INFRASTRUCTURE AND HUMAN RESOURCES. - ONLY FEW VEHICLES CAN BE INSPECTED.
ON ROADS	- ALL THE VEHICLES PASSING THROUGH THE KEY LOCATION ARE INSPECTED. - THE MOST IMPORTANT TESTS (WEIGHT AND TYRES) CAN BE PERFORMED. - THE INSPECTION IS AUTOMATIC AND DISCRETE.	- NOT ALL THE TESTS CAN BE PERFORMED.

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ACTIA IS HAPPY TO PROPOSE YOU THEIR INNOVATIVE PROJECTS FOR ROAD SAFETY & PUBLIC HEALTH IMPROVEMENTS IN DEVELOPING COUNTRIES.

THANK YOU FOR YOUR ATTENTION.

YANNICK LE GUEVELLOU