Progress Report of the VIAQ (Vehicle Interior Air Quality) Informal Working Group

8th June 2017

Chair: Jongsoon LIM, Korea

Co-chair : Yunshan GE, China

Technical secretary: Andreas Wehrmeier, OICA

● VIAQ Background, ToR and Mandate

➢ **WP.29 Mandate**(ECE/TRANS/WP.29/1112, para 133)

- AC.3 endorsed the proposed action plan to, in a first stage, collect information, review existing standards and develop recommendations.
- End of mandate : November 2017

➢ **GRPE Adoption**(ECE/TRANS/WP.29/GRPE/70)

- GRPE adopted the proposals for terms of reference to the IWG on VIAQ as reproduced in Annex VI of this report.

➢ **Review of VIAQ Terms of Reference**

- The scope of the work is to develop a recommendation (R.E.3, S.R.1, or a new Mutual Resolution) to harmonize test procedures of interior air emissions emitted/generated from interior materials.

VIAQ IWG Meetings

- **VIAQ IWG Meetings since the last GRPE sessions**

➢ **8th VIAQ IWG Meeting**

- Moscow, Russia, April 25th – 26th

➢ **9th VIAQ IWG Meeting**

- Tele-conference Meeting, June 1st

● Working document

➢ ECE/TRANS/WP.29/GRPE/10

- Proposal for a new Mutual Resolution (M.R.3) of the 1958 and the 1998 Agreements concerning Vehicle Interior Air Quality (VIAQ)

< Contents>

I. Statement of technical rationale and justification

1. Introduction
2. Procedural background
3. Existing regulations and standards
4. Technical rationale and justification,
5. Technical feasibility, anticipated costs and benefits

II. Text of the Mutual Resolution on Vehicle Interior Air Quality

1. Purpose
2. Scope and application
3. Definitions
4. Abbreviations
5. General Provisions
6. Normative references
7. Requirements for the test vehicle
8. Requirements for the test apparatus/instrument/equipment
9. Test procedure, test mode, and test conditions
10. Calculation, presentation of results, and precision and uncertainty
11. Performance characteristics
12. Quality assurance/quality control

Annex 1 Whole vehicle chamber
Annex 2 Sampling position
Annex 3 Test Schedule
Annex 4 Test report

4p

● Informal documents

➢ GPRE-75-02, GRPE-75-03 (consolidated version)

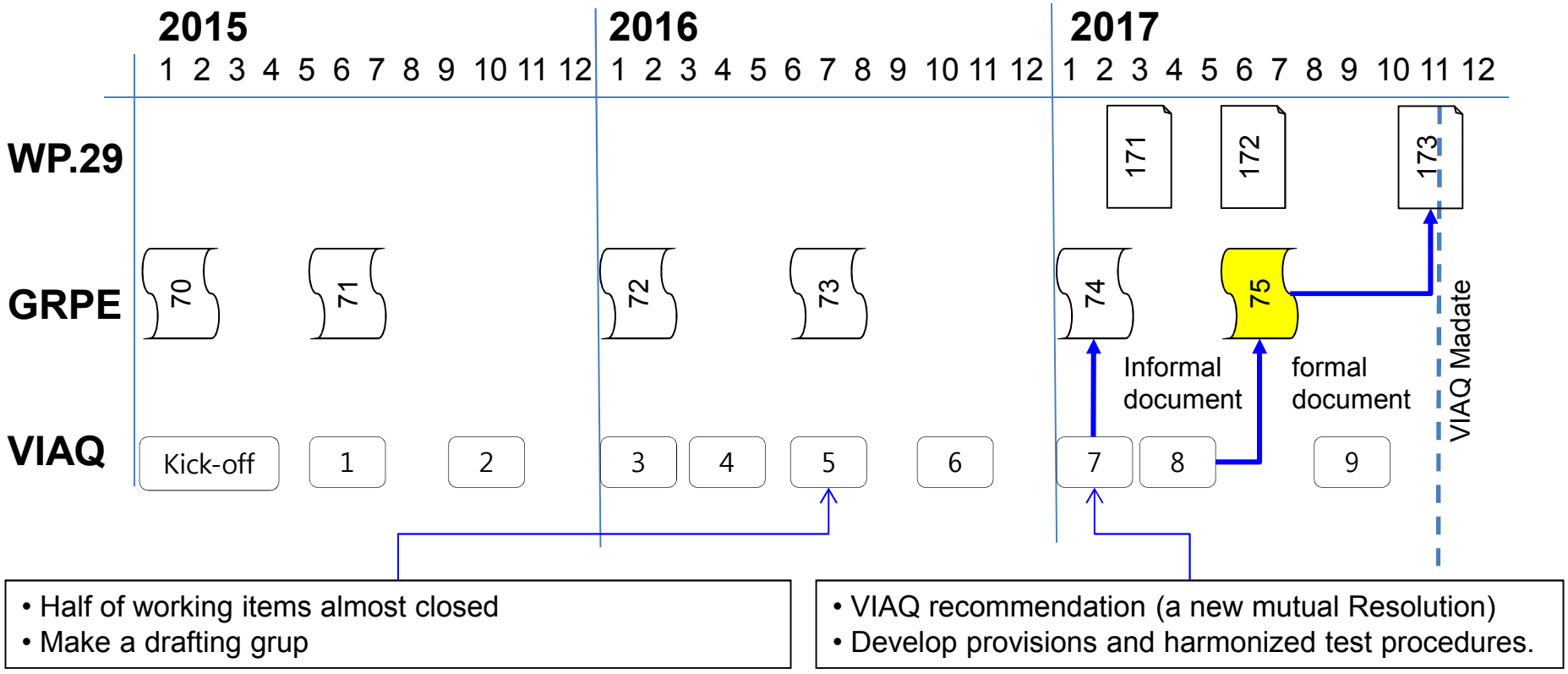
- Proposal for amendments to ECE/TRANS/WP.29/GRPE/2017/10 on a new Mutual Resolution on VIAQ

➢ Justification

- Most paragraphs are editorial corrections to improve the wording clarification
- Adds “carbonyl compounds” and “VOCs” to further define and classify test substances
- Considers the current level of background concentration
- Gives flexibilities with no affects to the tests for opening the door time to “30-60 minutes”
- Gives specific set temperature for HVAC setting in driving mode and changes to “23 ° C
- Test reports (Annex IV) includes additional information with regard to series of date, and temperature and humidity of ambient, parking and driving test modes.

Roadmap, Timeline

● Roadmap



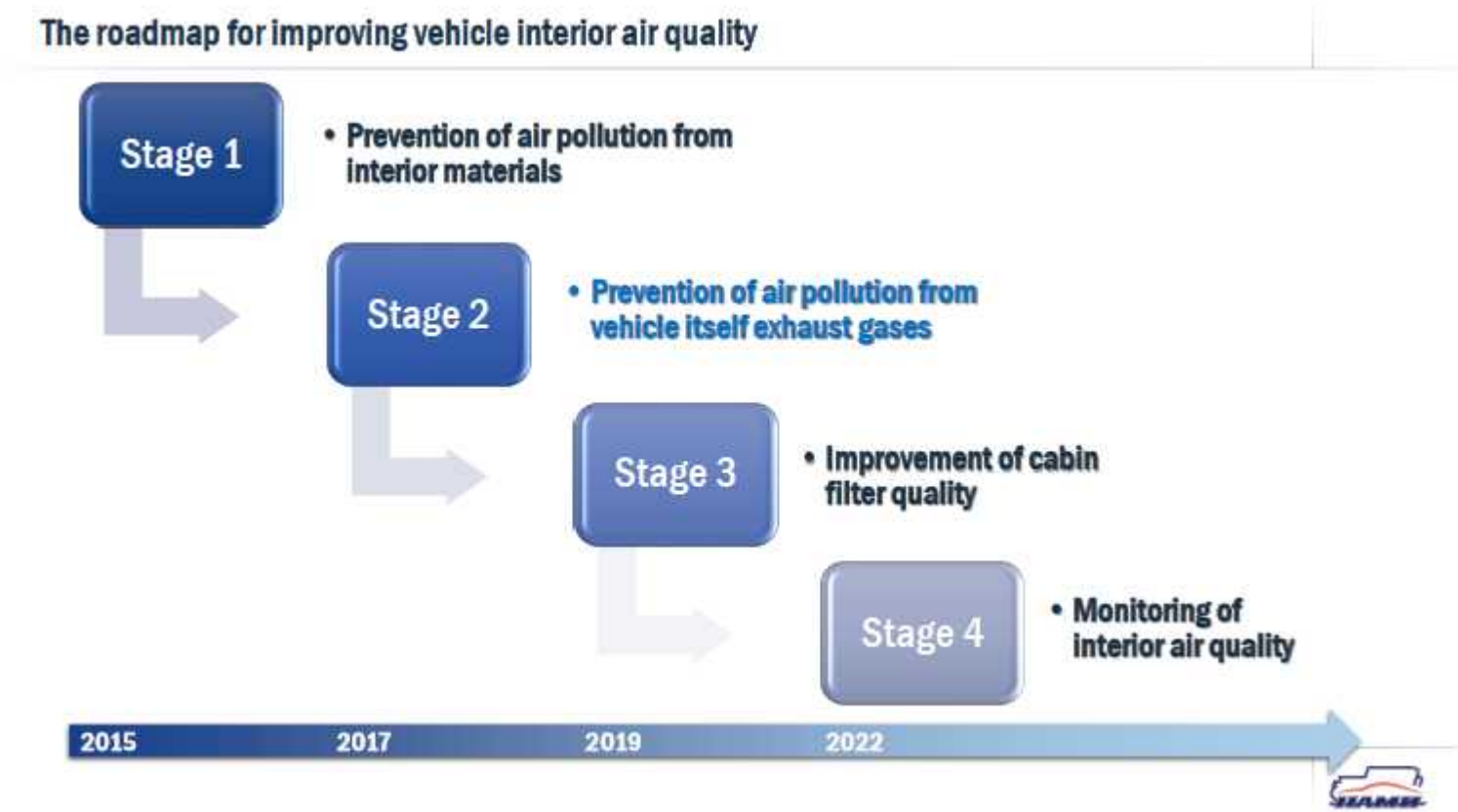
➢ **January 2017 : Submit the VIAQ document as an informal document**

➢ **June 2017 : Submit the amendment of VIAQ document, if necessary**

The Second Stage Mandate

- **Second stage of VIAQ IWG Mandate**

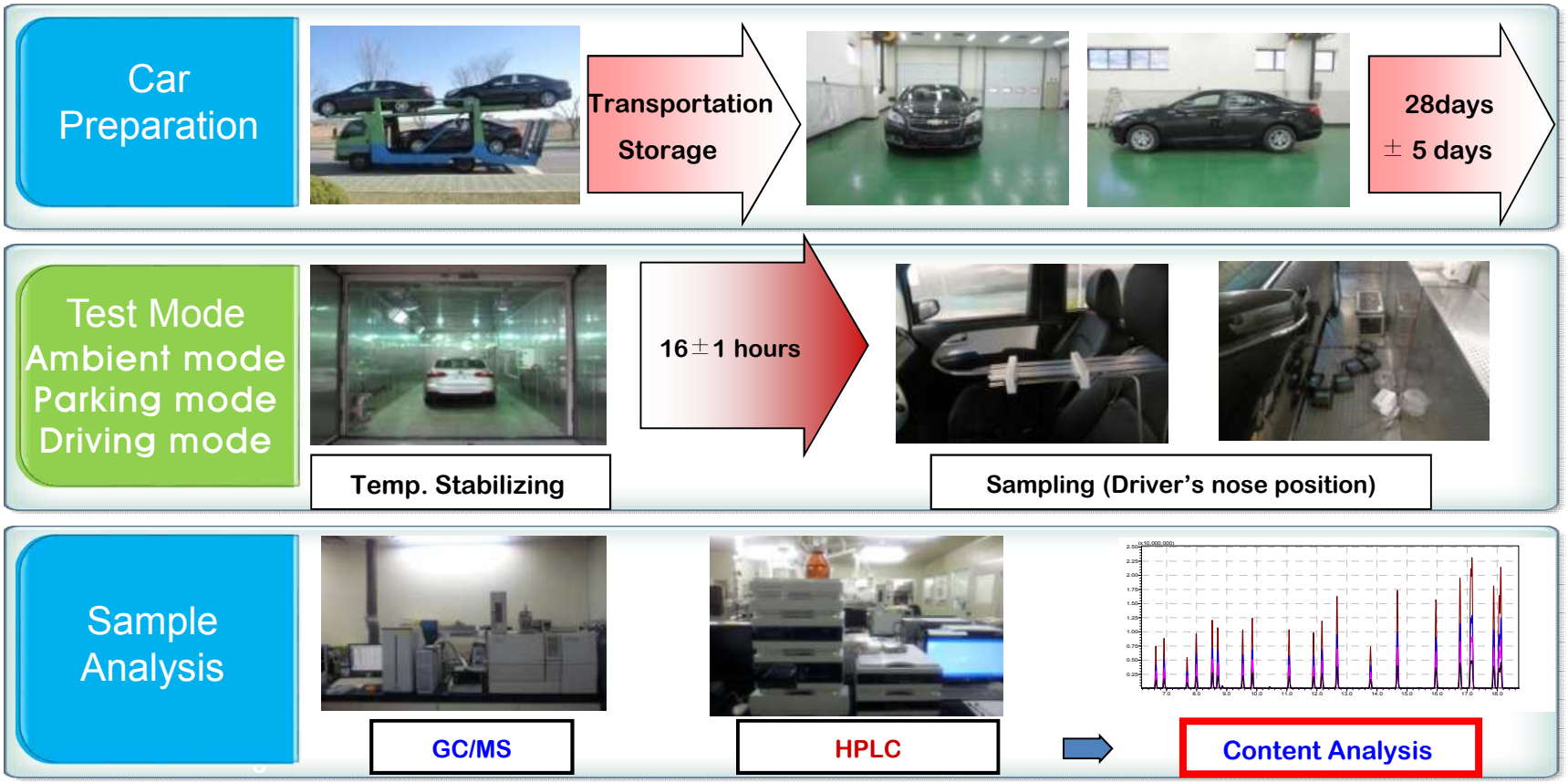
  - **Discussion on the second stage**(VIAQ-07-11)



The Second Stage Mandate

● Roadmap of VIAQ IWG Activities

➢ **Stage 1 -** Measurement for interior material emissions

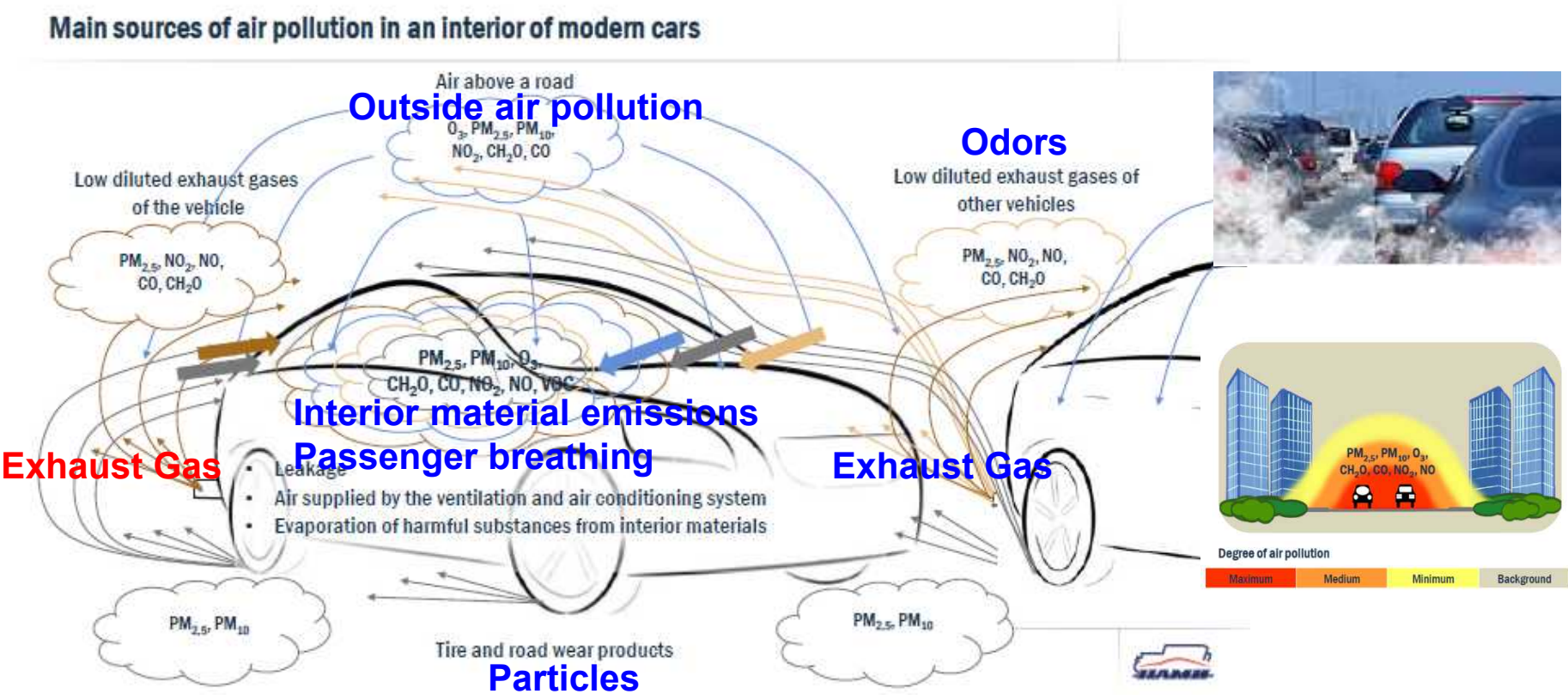


GC/MS: Gas Chromatography Mass Spectrometry
HPLC : High Performance Liquid Chromatography

The Second Stage Mandate

● Roadmap of VIAQ IWG Activities

➢ **Stage 2 -** Develop the test procedure for vehicle exhaust gases entering the vehicle cabin (VIAQ-07-11)

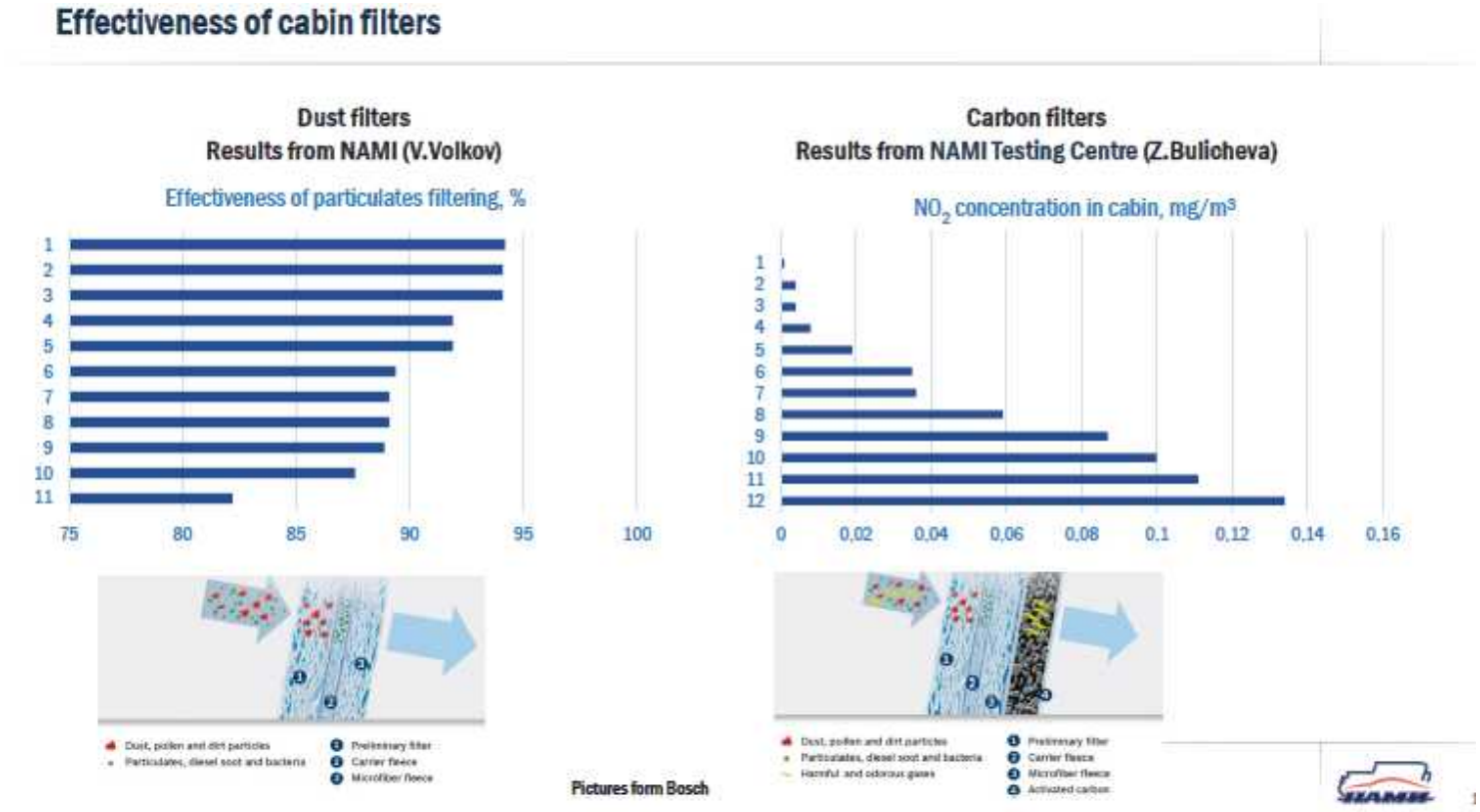


The Second Stage Mandate

● Roadmap of VIAQ IWG Activities

➢ **Stage 3 -** Assessment of cabin filter quality (VIAQ-07-11)

- Particle filter, Active carbon filter, Combined filter, HEPA filter



The Second Stage Mandate

● Roadmap of VIAQ IWG Activities

➢ **Stage 4 -** Monitoring of interior air quality (VIAQ-07-11)

- AQS (Air Quality Sensors), PM sensor, Ionizer, CO2 management in cabin,

Interior air quality monitoring

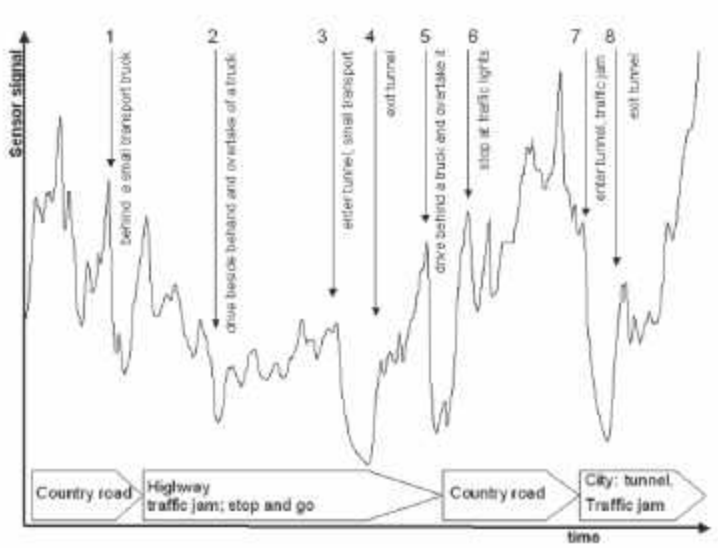
Sensors

Fuel vapors Carbon oxide

Comparison of three gas-sensing technologies with respect to vehicle air quality monitoring criteria

Criteria	Infra Red–Optical	Electrochemical	Metal Oxide
Cost	$15US	$10US	$10US
Life time	>6 years	2–5 years	>6 years
Sensitivity	Very Good	Very Good	Very Good
Selectivity	Excellent	Very Good	Poor
Response time	seconds	seconds	seconds
Size	Medium	Medium	Small
Ease of use	Good	Excellent	Excellent

Typical sensor signal during a test drive



Data sources: 39-40

The Second Stage Mandate

- **Informal documents (GPRE-75-0x)**

➢ **Terms of Reference for the second stage (Draft)**

✓ **Objective**

- This proposal expands on the issues of the vehicle interior air quality, addressing exhaust gases entering into vehicle cabin air, to **develop a test procedure in a recommendation**.

✓ **End of mandate** : November 2020

✓ **New leadership team** : Chair(Russia), Co-chair(Korea),Secretary(OICA)

✓ **Submit Final Terms of Reference** : 76th GRPE January Session

The Second Stage Mandate

● Informal documents (GPRE-75-0x)

➢ Work scope and work items (Draft)

✓ **6.1 Interior air emissions emitted from interior materials**

- (a) Continue to work, review, and assess the harmonized test procedures
- (b) Update the interior emissions sections for the Mutual Resolution

✓ **6.2 Exhaust gas entering into vehicle cabin air**

- (a) Collect the information and research data on relevant and similar issues, and understand the current regulatory requirements with respect to vehicle interior air quality in different markets
- (b) Review, assess and develop new test procedures suitable for the measurement methods of exhaust gases entering into the vehicle cabin (including test modes, sample collection methods and analysis methods, etc.)
- (c) Discuss the maximum permissible concentrations of harmful substances in the vehicle interior air
- (d) Develop a draft for test procedures in a recommendation

- **6.3 Vehicle cabin air affected by outside air pollution sources**
- (a) Collect the information and research on relevant and similar issues

Next VIAQ IWG Meeting

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➢ **9th VIAQ IWG Meeting (TBD)**

- October or November 2017

➢ **10th VIAQ IWG Meeting (TBD)**

- Geneva, Switzerland, January, during 76th GRPE session
- Half a day requested