

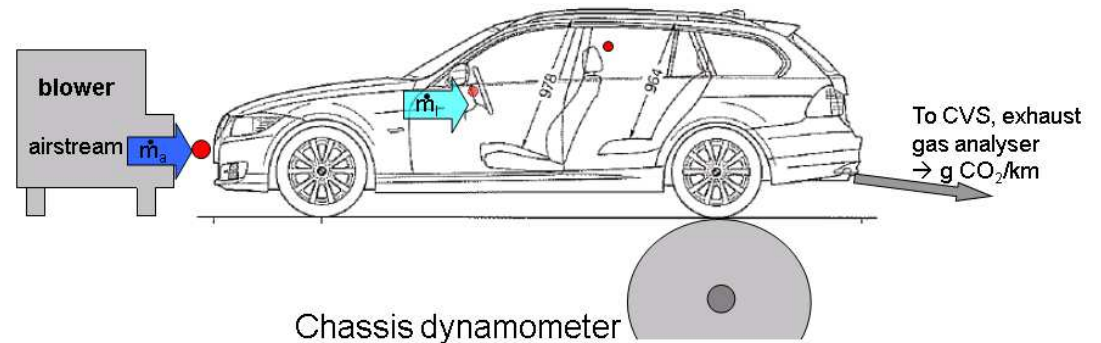
# Update of MAC Pilot Test Phase

Informal meeting of MACTP working group at 64<sup>th</sup> GRPE

June 5<sup>th</sup> 2012  
Geneva

Consortium of:

TNO: Willar Vonk  
TUG: Stefan Hausberger  
LAT: Zissis Samaras  
Savas Geivanidis



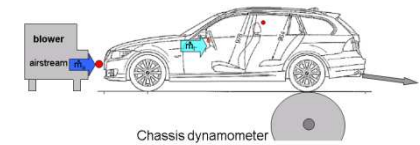
Assigned by EC DG Entr:  
Nikolaus Steininger

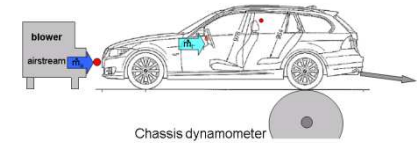
This presentation will be made available on the UNECE website

## Agenda:

### MAC Pilot Test Phase:

- › Introduction
- › Short description
- › Topics addressed in test Phase A
- › Preliminary results of test Phase A
- › Outlook





## Targets of the MAC Pilot Phase

### → Create technical annex to the Regulation

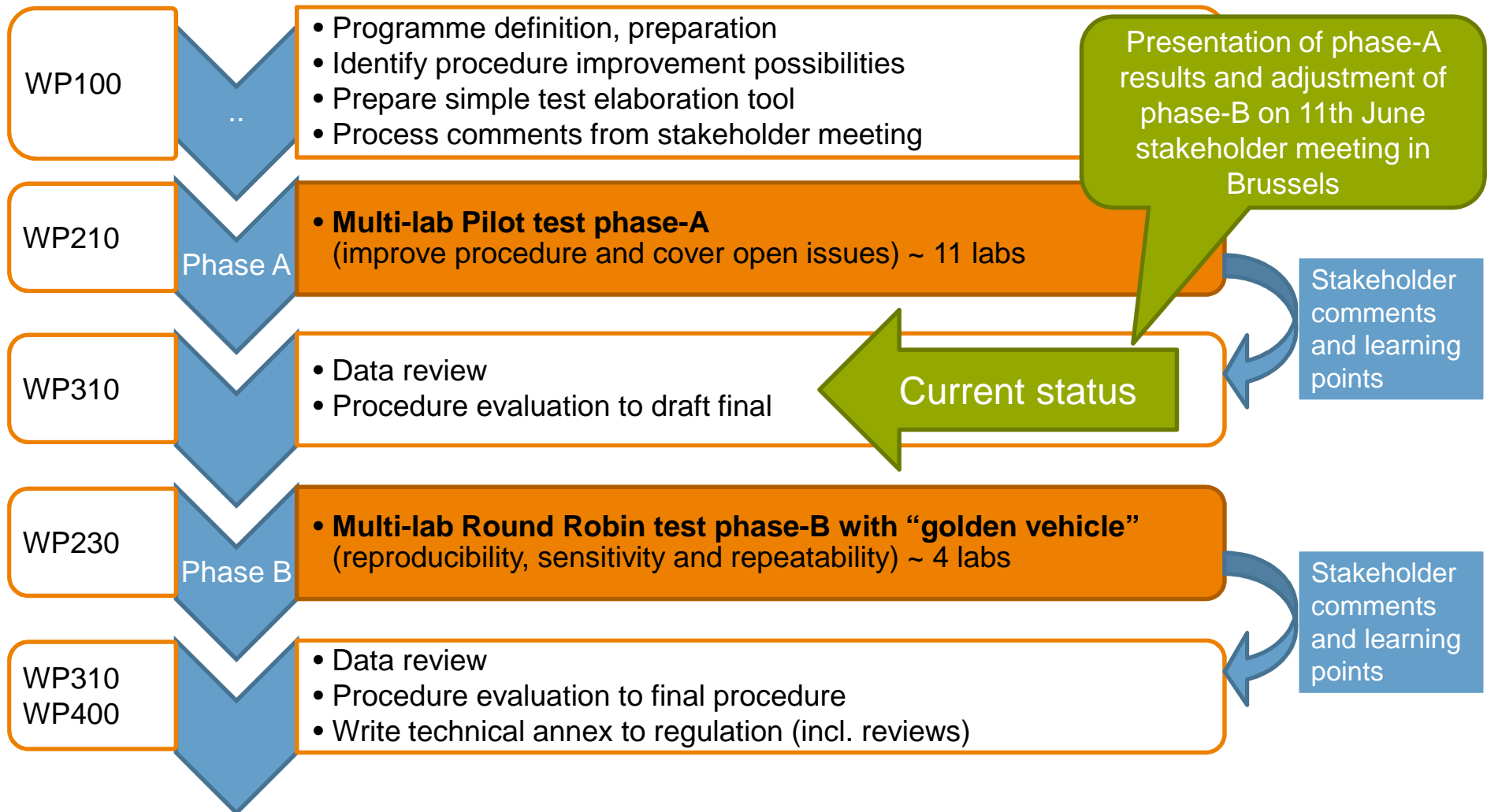
A draft type approval test procedure for MAC energy efficiency assessment was developed by Consortium of TUG, LAT, KTI and TNO.

Pilot Test Phase is defined to:

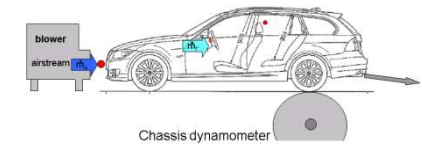
- › Cover open issues and options for settings and data processing
- › Check repeatability and sensitivity of the test procedure
- › Follow-up to the MAC test procedure a technical annex to the Regulation

During Pilot Phase, labs also gain experience with the procedure

## MAC Pilot Test Phase contains two test phases:



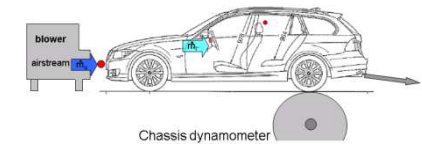
## Participation in pilot Phase-A



| Participant   | Expressed interest | Performed measurements | Vehicles tested | Measurements submitted |
|---------------|--------------------|------------------------|-----------------|------------------------|
| A             | YES                | YES                    | 2               | 4                      |
| B             | YES                | YES                    | 3               | 25                     |
| C             | YES                |                        |                 |                        |
| D             | YES                | YES                    | 2               | 11                     |
| E             | YES                | YES                    | 2               | 3                      |
| F             | YES                |                        |                 |                        |
| G             | YES                |                        |                 |                        |
| H             | YES                | YES                    | 4               | 36                     |
| I             | YES                |                        |                 |                        |
| J             | YES                | YES                    | 2               | 5                      |
| K             | YES                |                        |                 |                        |
| L             | YES                |                        |                 |                        |
| M             | YES                | YES                    | 1               | 1                      |
| N             | YES                | YES                    | 1               | 4                      |
| <b>Total:</b> | <b>14</b>          | <b>8</b>               | <b>17</b>       | <b>89</b>              |



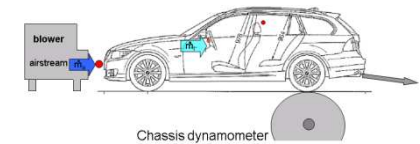
## Topics that have been addressed in pilot phase-A



- › Sensitivity of the procedure for different:
  - ✓ › MAC technologies (as far as possible)
  - ✓ › Engine size and fuel types
  - ✓ › Vehicle sizes and classes
- › Sensitivity of the procedure for variations in:
  - ✓ › Ambient temperature and humidity (test at low and high)
  - ✗ › GSI versus fixed gear shift strategy
  - ✓ › Soaking temperatures (between 20°C and 30°C)
  - ✓ › Drive cycle at minimum and maximum speed (dyno power)
  - ✓ › Blower on/off in MAC off phase of the test
  - ✓ › Solar load simulation during the test in (one lab)



## Preliminary Results (without insight into actual data)

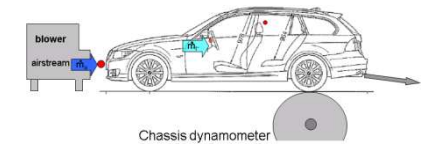


- › In general the procedure is found to be reliable
- › Sensitivities are or can be corrected for with correction formulas
- › Some details still need discussion:
  - › Ranges of Humidity and Temperature
  - › Number of repetitions for TA
  - › Allow bag measurements yes or no
  - › Different vehicle sizes in relation to HVAC mass flow setting
  - › Blower on/off during MAC-off phase



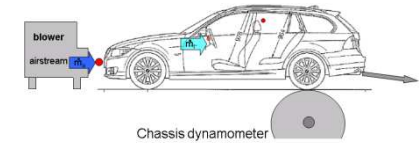
## Outlook of activities

- › Stakeholder meeting on 11<sup>th</sup> of June
- › Fine tuning of the procedure
- › Round Robin testing (July – October)
- › Procedure finalization
- › Develop technical annex to regulation

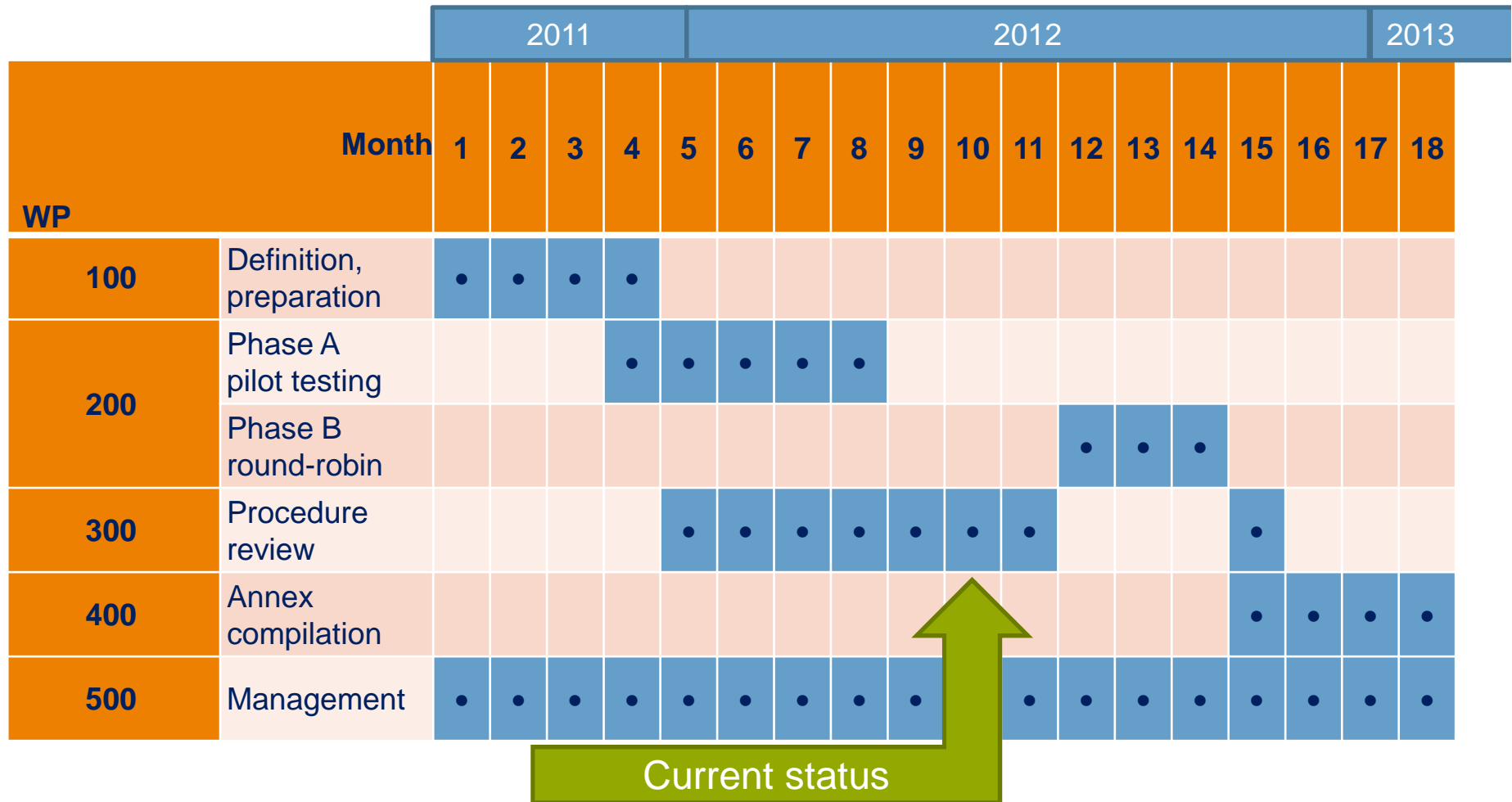


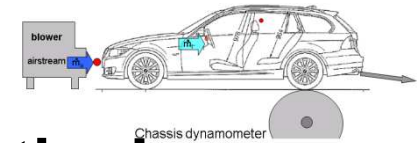


# Time Schedule of the Pilot Test Phase



Project started 16 August 2011





**Thank you very much for your attention!**



**Questions?**



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