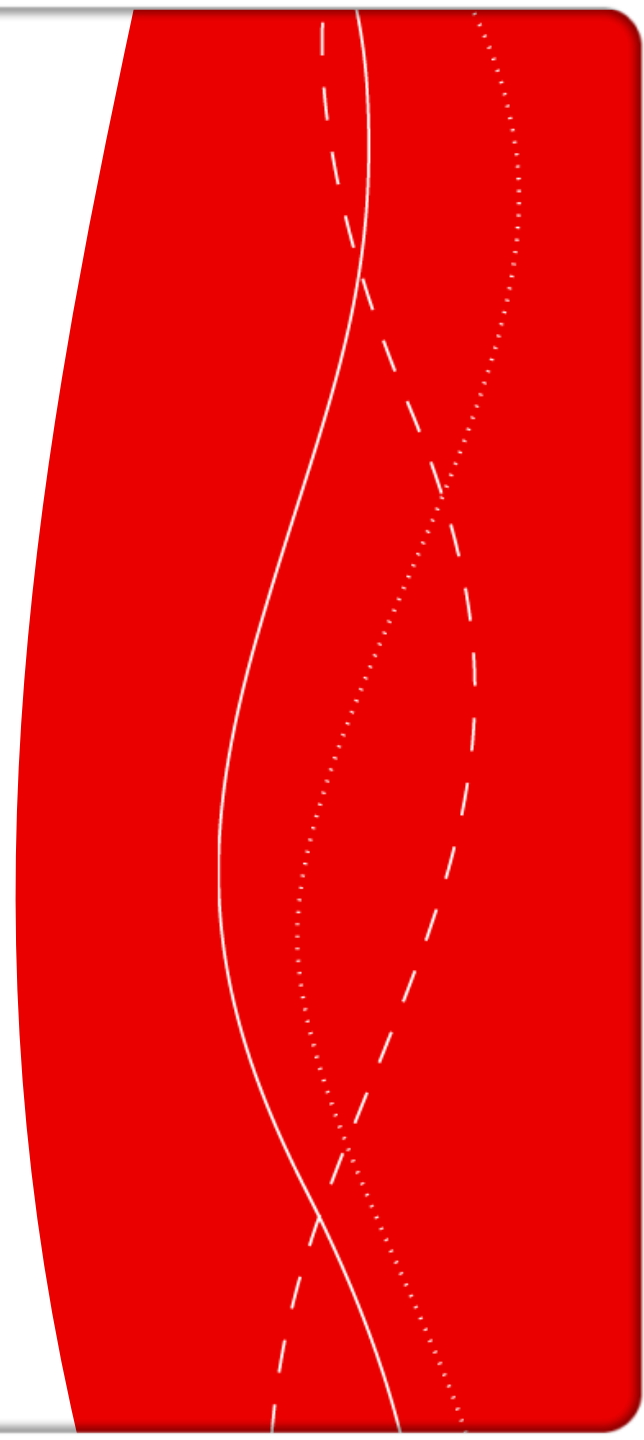




FWDB - Review of Benefits and Future Activities

Robert Thomson



Current Status of Full Width Test

- FWDB Proposed by FIMCAR for Full Width test to improve R94
 - Metrics Proposed to promote structural alignment
 - Potential to evaluate all M1 vehicles with one FW test
- FWRB evaluated by FIMCAR and rejected for technical reasons
 - Requires supplementary tests to evaluate raised vehicles
 - Very short time interval for assessment
- GRSP FI group proposes FWRB for Europe in meeting January 30, 2013

Outstanding Issues with FWDB

Two criticisms have been directed towards the FWDB:

1. Repeatability:
 - There are apparent issues with the repeatability of the test procedure due to the vehicle choice in FIMCAR (most unstable model chosen) and the LCW was the not conforming to proposed FIMCAR requirements
 - Component tests conducted by FIMCAR suggest the LCW is robust enough for compatibility
 - Tests from Japan (FI Meeting 16) highlighted barrier performance issues that should be addressed

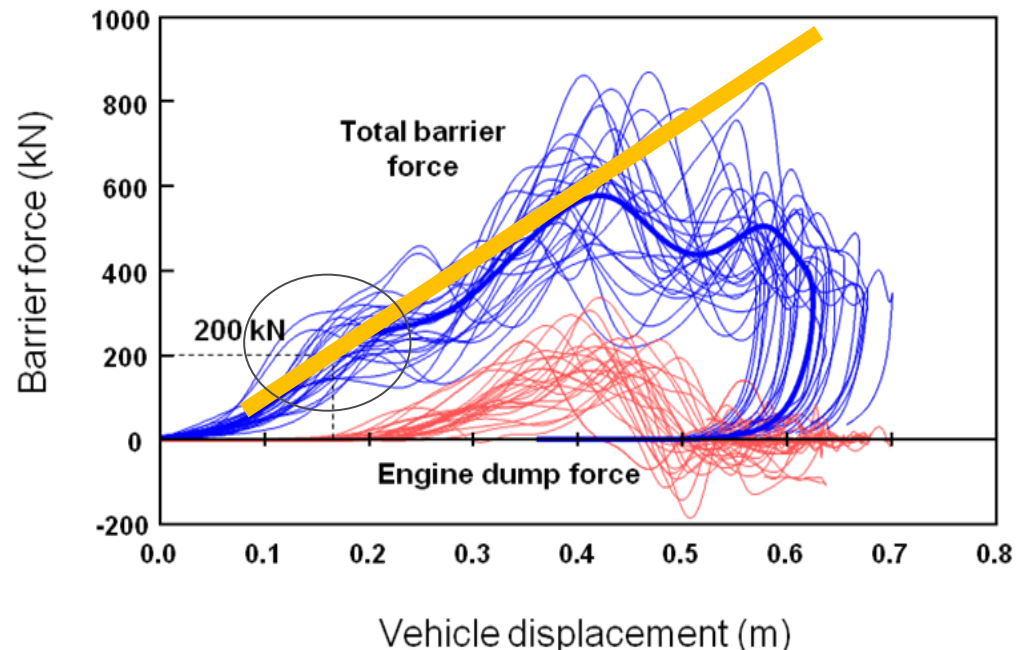
Outstanding Issues with FWDB

2) Compatibility Metric

- The metric proposed by FIMCAR was developed for 56 km/h but a 50 km/h test speed is proposed
- The role of SEAS in a car-to-car collision is difficult to quantify although FIMCAR
- Some road maps for frontal impact recommend postponing compatibility assessment until after Step 1 (2014)

Observations

- 1) Repeatability of the FWDB is being investigated during spring 2013 and more information will be presented to the FI group
 - Planned activities are load cell wall measurement repeatability and honeycomb deformation stability
- 2) No FWRB metric has been presented that addresses SEAS assessment without additional tests. Criticisms that the FWDB assess forces during an interval of rapid load increases is more critical for FWRB



Observations

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3) Proposals to address compatibility via a (M)PDB type assessment in a second phase of frontal impact will be expensive to develop and critical issues have not been resolved regarding self protection of heavier vehicles – Not resolved with pure passive safety measures. Window for opportunity may be past.

Recommendation

- 1) FWDB offers benefits in frontal impact even without formal structural alignment assessment
- 2) FWDB can be applied even in step 1
- 3) FWDB can be upgraded in the future with compatibility assessment
- 4) FWRB does not offer long term benefits to Frontal impact

Way Forward for FW test

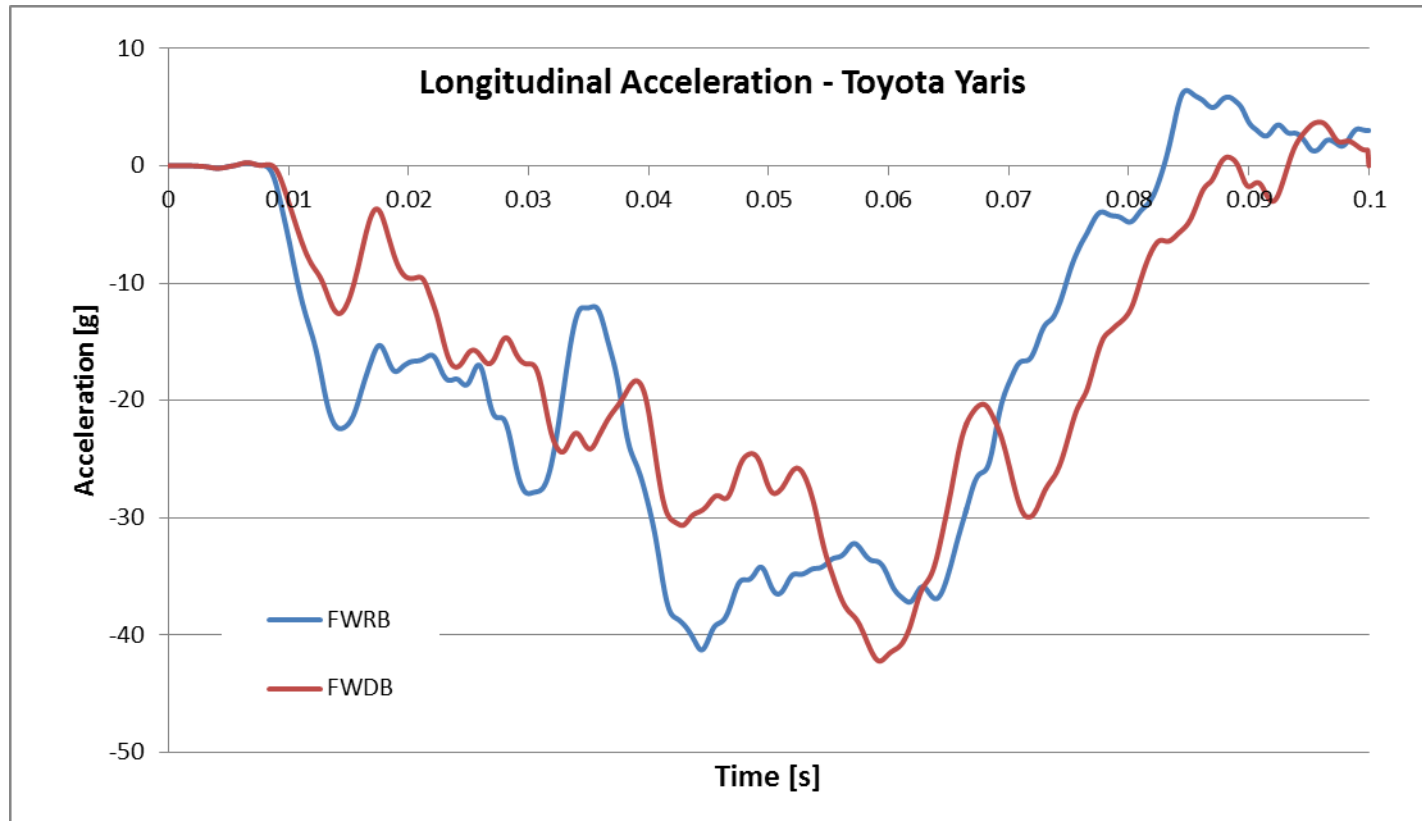
- 1) Demonstrate if there is a benefit or dis-benefit for the FWDB
- 2) Identify if repeatability issues for FWDB, exclusive of LCW, are too great for regulation

Time Frame:

Before Summer 2013

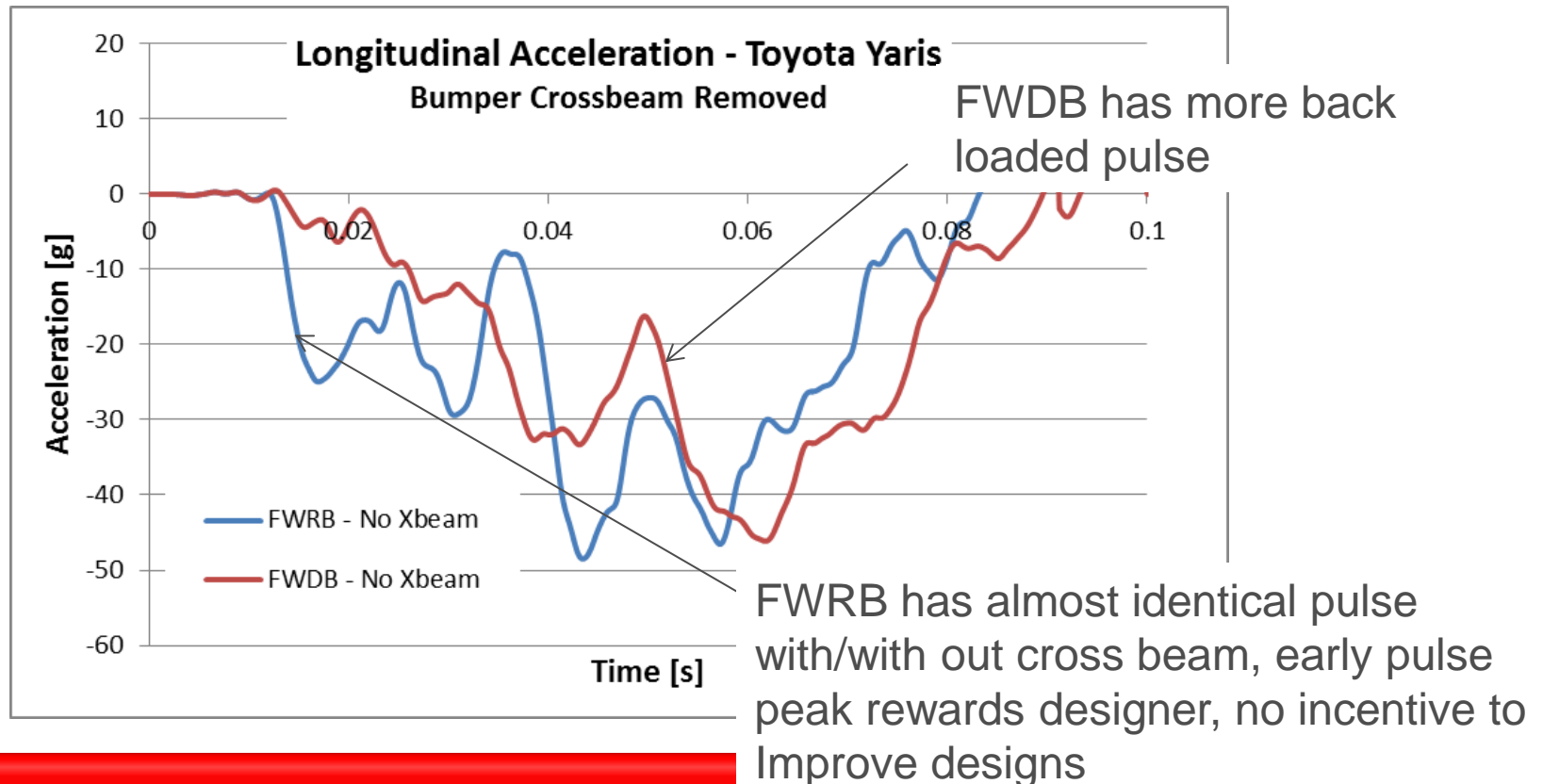
Value of FWDB

1) The FWDB does not create an “easier” test due to the deformable element – similar acceleration levels to FWRB at 50 km/h



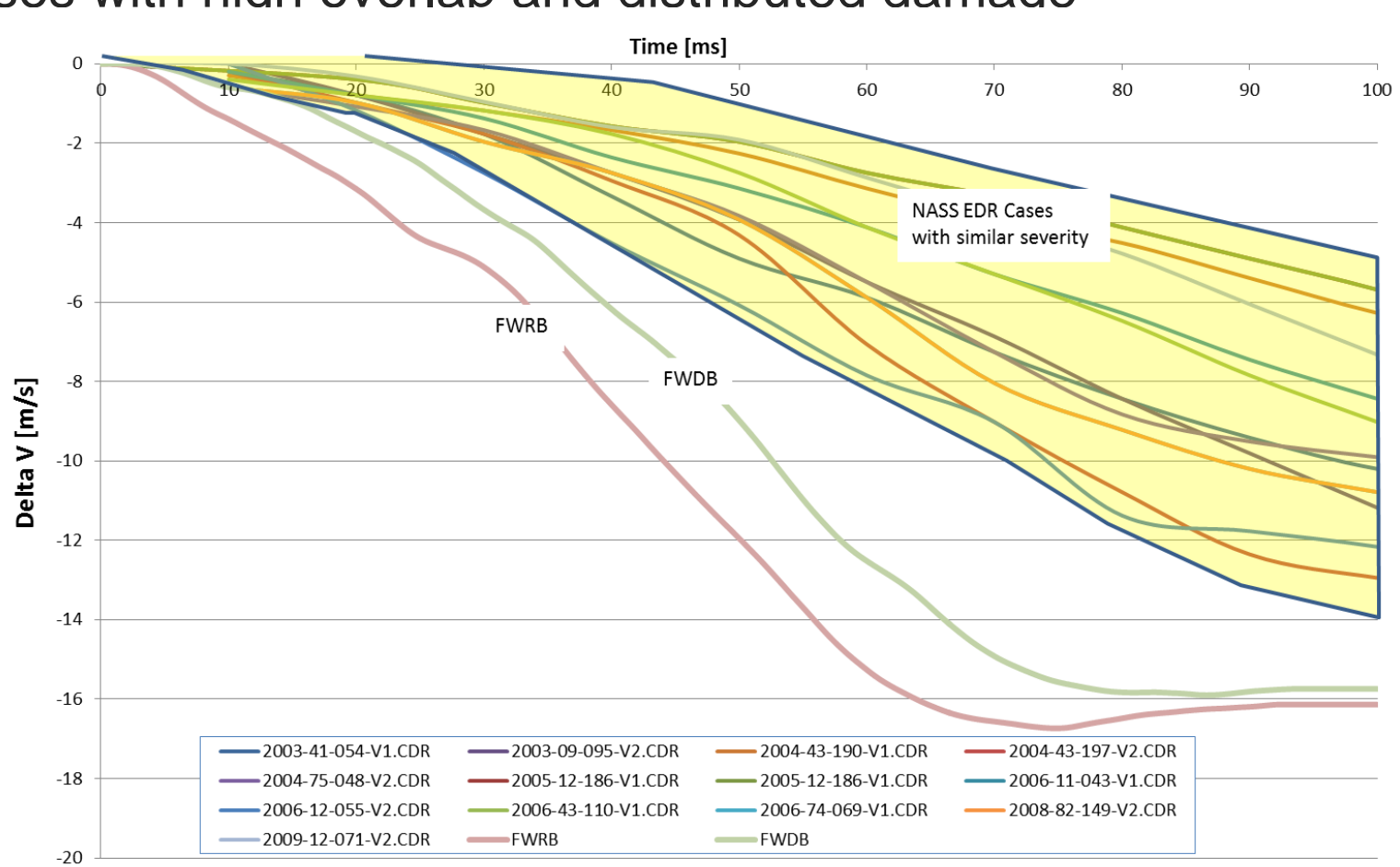
Value of FWDB

2) Testing with the FWDB encourages manufacturers to improve lateral load spreading. FWRB does not punish poor designs



Value of FWDB

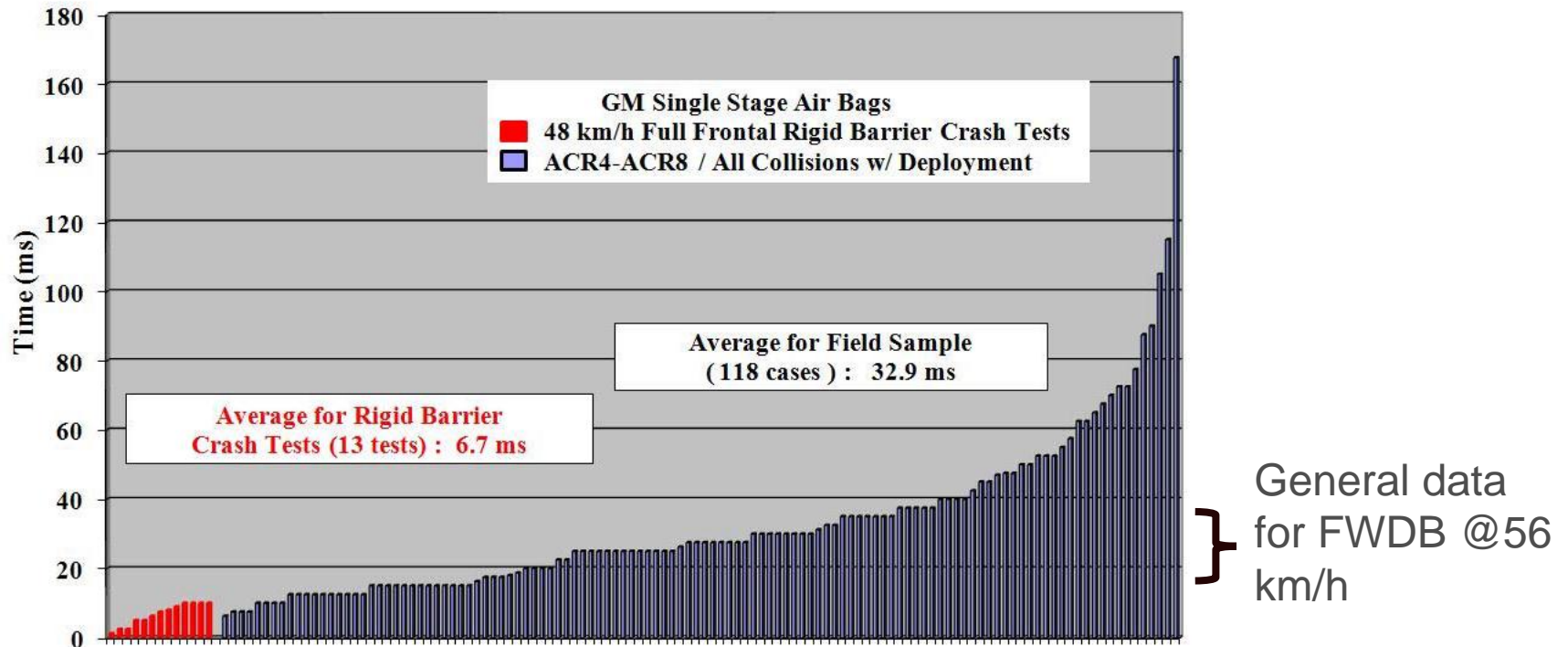
3) FWDB closer to Real World Pulses when compared to EDR cases with high overlap and distributed damage



Value of FWDB

4) Airbag firing time tends to be later for FWDB, more consistent with real world data

Range of Airbag Fire Decision Times Observed in Crash Tests and Field Collisions



CRASH PULSE ANALYSIS USING EVENT DATA RECORDERS Dainius J. Dalmotas, Alan German, Jean-Louis Comeau, Canadian Multidisciplinary Road Safety Conference, 2009

Conclusions

- 1) FWDB needs to verify it has suitable repeatability
- 2) FWDB has advantages over FWRB even without a load cell wall
- 3) FWDB has more potential for assessing structural assessment of vehicles
- 4) Future compatibility with (M)PDB assessments unlikely without extraordinary research commitments

Acknowledgement

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