

INTERNATIONAL HARMONIZED RESEARCH ACTIVITIES (IHRA) STATUS REPORT OF THE VEHICLE COMPATIBILITY WORKING GROUP

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INTRODUCTION

At the Melbourne ESV in May 1996, as part of the International Harmonised Research Activities (IHRA), it was agreed that one of the six Working Groups set up was to study compatibility. It was recognised that separate regulations on frontal and side impact do not address compatibility problems. Research programmes on compatibility between cars are now active in a number of countries and it was agreed that international co-ordination on all this work would be beneficial.

The European Union and the European Enhanced Vehicle-Safety Committee were asked to be the lead group for the compatibility work. In turn the United Kingdom was invited to nominate a chairman for the working group. Action was taken in early 1997 to set up the group and define its objectives. Meetings so far have been held in June and October 1997 and in February 1998. The fourth meeting is to take place during the ESV conference in Windsor.

AIM

The aim of it is to develop internationally agreed test procedures designed to improve the compatibility of car structures in front to front and front to side car to car impacts thus enhancing the level of occupant protection provided in frontal and side impacts. A secondary aim will be to consider the protection in impacts with pedestrians, heavy goods vehicles and other obstacles.

PARTICIPATION

The EU and EEVC agreed that participation in the IHRA Working Group from within Europe would be limited to the Chairman and Secretary plus two Members from EEVC Working Group 15 which is studying compatibility issues within Europe. In addition to these four, member representatives have also been nominated from the United States, Canada, Australia, Japan, and Poland.

The IHRA Steering Committee meeting in November 1997 agreed that all IHRA Working Groups should have representation from industry. A letter was

sent by NHTSA to OICA in March 1998 inviting them to nominate three Working Group Members from industry to represent North America, Europe and the Far East. It is anticipated that future meetings of the Working Group will include these representatives.

WORKPLAN

When IHRA was set up in 1996 it was agreed that the aim should be for all work groups to have completed their tasks in time to report to the ESV conference in 2001. With regard to compatibility this is an act of faith as the problems are not simple and require a timely breakthrough if this programme is to be met.

At Annex A shows the work planned which is broken into three main activities:

- **Problem definition.** Real life accidents are the key to defining the compatibility problems that exist today. This work is to study the statistics on fleet make up in various countries as well as the typed of accidents that occur on their roads. It will be necessary to extract from this information accidents where compatibility has had a part to play in the outcome. Once these accidents are identified they can be used to determine the important characteristics for compatibility.
- **Key characteristics.** Once found, these characteristics will be used to replicate real accidents by crash testing, and by system modelling to be able to understand what is happening on the road. By this means it should be possible to develop a hypothesis on compatibility and find out how the effects can be mitigated.
- **Assessment methodology.** The final phase of the workplan is to develop testing protocols which when adopted into regulations will ensure that vehicles become more compatible.

At Annex B shows the tasks that each member has agreed to undertake and the time frame which is being allocated for them to be completed. As it will be seen this predicts a completion of the work activity at year 2000, but as explained there is no clear way to achieving the goals by this date.

PROGRESS

Fleet Studies

The EEVC working group had in place a work task to create a data base of current cars in Europe giving the various parameters for each model that it was thought would influence compatibility. These parameters included such factors as types of structure and the position of stiff elements that would react with one another in accidents. This work is almost complete.

In the USA work had been completed to categorize the vehicle fleet and study how this was changing. A particular problem identified was the number of sport utility vehicles emerging in their market. It became apparent that the size difference between these vehicles and the rapid growth in the proportion of these types of vehicles in the fleet was going to pose a big problem for compatibility.

Elsewhere work on the fleet studies has yet to be reported to the IHRA working group but work has been promised for the future.

Accident Studies

Accident studying in a number of countries in Europe is very mature and ranges from the collection of overall statistics to detailed investigation of specific accidents. Investigations are carried out "on the spot" in some countries whilst in others the work is done post accident. Experts have been assembled to discuss compatibility issues as displayed by current accidents, but as yet no conclusions have been drawn from this work. The intention is to identify types of vehicles that exhibit both good and poor compatibility and then study individual accidents involving these types to obtain information to be taken forward into the "key characteristics" phase.

In the USA work has been completed on studying the compatibility aspect of the existing fleet allowing vehicles to be positioned in a compatibility matrix. Follow up studies using current accident data will continue for the period of the IHRA work.

Elsewhere work has yet to be reported to the IHRA working group.

Modelling

Modelling programmed under the work plan controlled by EEVC WG15 has just started and as yet there is a little output. The intention is to use this work in conjunction with the crash testing programmes. Some finite element models will be obtained through the work in the USA on compatibility and TRL is also using FE models supplied by some manufacturers. The UK is also funding some further modelling effort in this area which will be fed in through WG15.

The USA modelling programme is advanced both in deriving individual models for representative fleet vehicles, as well as in producing a system model of vehicle accident activity in the US. So far no other modelling activity is occurring elsewhere in the programme.

Crash Testing

As yet no crash testing has occurred specifically for IHRA. This activity is about to get under way in the US, but the EEVC work awaits better definition from the accident and modelling studies.

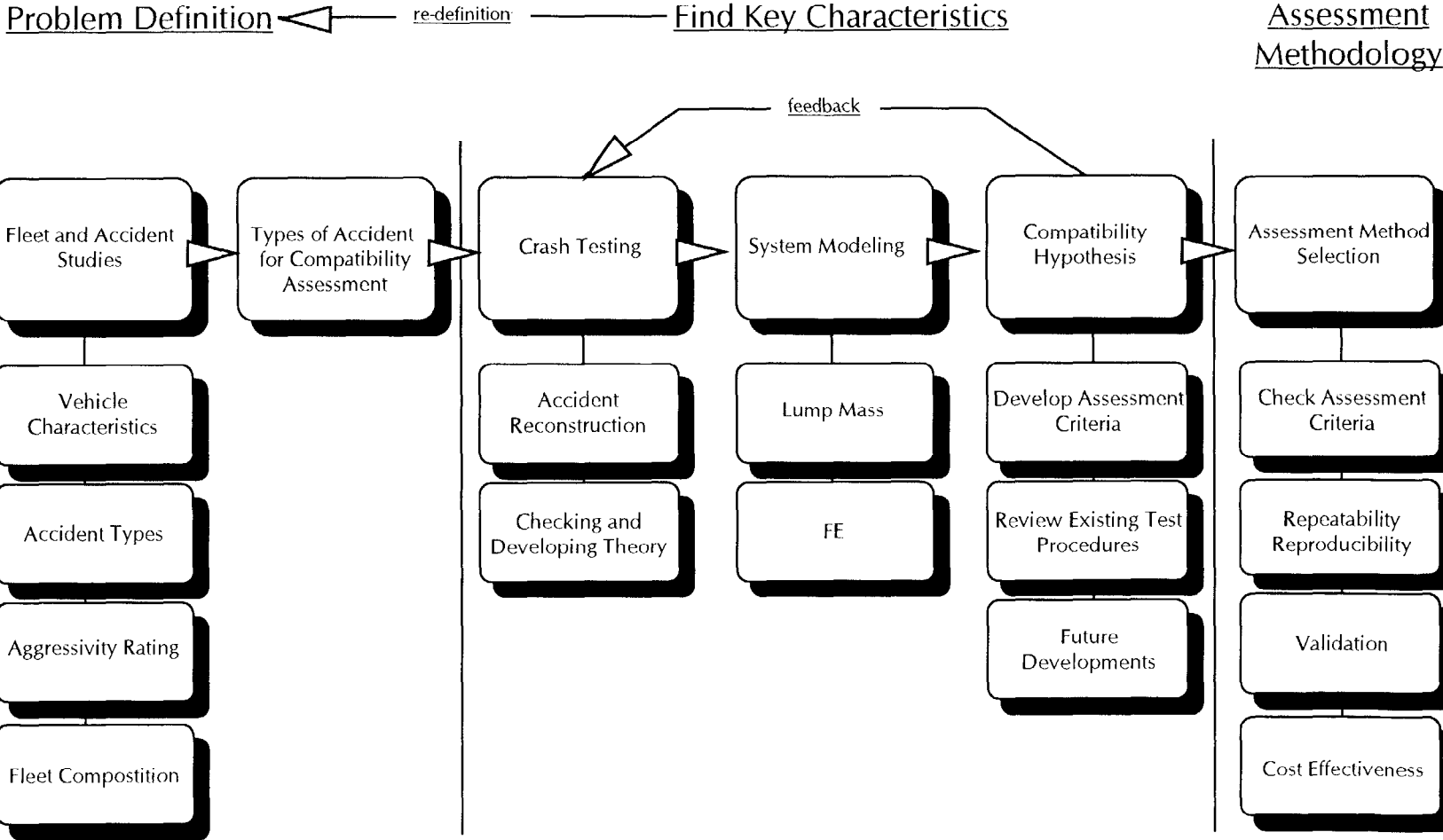
CONCLUSIONS

The IHRA Compatibility working group was set up after work in the area was already underway in several countries. The task of the working group has been to co-ordinate these efforts, and to steer them towards common goals. One of these goals is to have results available by 2001, to achieve this all participants have been encouraged to think now about possible testing methods so that there can be concurrent activities to reduce the overall time frame. A second goal concerns deriving common methods to control compatibility, which takes into account the dissimilar conditions applying on different continents. It is apparent that fleet mix could be an area which poses a problem as the average sizes of vehicles vary dramatically between continents.

International Harmonised Research Agenda Compatibility Research Lead Country: EU/EEVC

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North America
Europe
Pacific



Compatibility Research

