

A National Strategy for Swedish R&D in Automotive Vehicle Engineering, a “PFF”-mission



Conclusions and recommendations

The Swedish automotive manufacturers will continue as global players in the future. The manufacturers of cars and commercial vehicles have great opportunities to further develop with Sweden as a base, resulting in increased sales and export. Globalization means more demands and efforts, but it also creates possibilities. So far the Swedish automotive industry has met the challenges well. The automotive balance of trade in 2002 was around 40 000 MSEK, and this net balance of trade has more than tripled between 1974 and 2002. It is equal to more than 4 % annual expansion over the last 28 years! But the business is tough. In the future it will be of utmost importance to compete with new knowledge and innovative products, which have high quality, safety and new features for the customers on world markets.

Present programmes within the scope of *Programrådet för Fordonsforskning, PFF*, with *Fordonsforskningsprogrammet* and *Samverkansprogrammet* (or the Green Car), very positively evaluated by third parties, should be regarded as good examples and an inspiration for *Emissionsforskningsprogrammet* EMFO and Intelligent Vehicle Safety Systems, IVSS. In the urgent matter of extending *Fordonsforskningsprogrammet*, we mean, that it should be in reference to the industry's letter of 2003 to the two government departments concerned. For the above mentioned four programs, we anticipate that they will continue to 2006-2008 according to current planning. Government financing is approx. 190 MSEK annually, and the corresponding funding from the industry is approx. 310 MSEK.

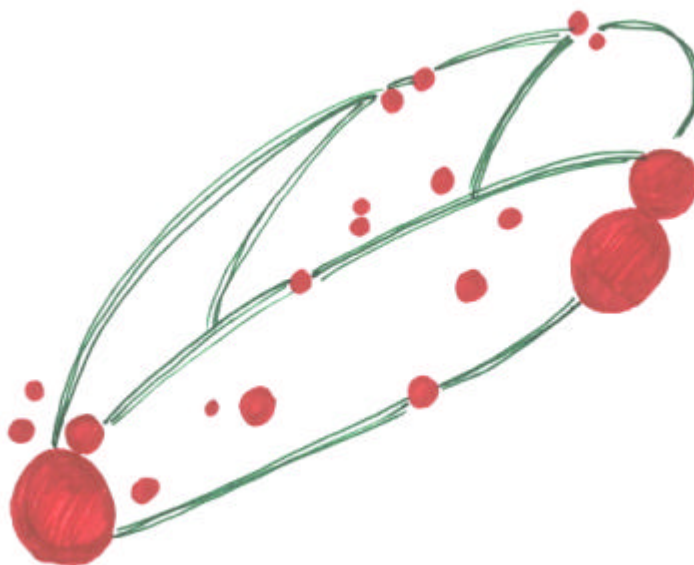
The proposals of the investigators are intended to start under the PFF-umbrella successively during 2006-2008. Strategic directions in line with the suggested strategy, financial budgeting and "rigging up" must be decided and implemented during 2004-2005. The investigation indicates areas for R&D with a vision towards 2012. It means that product realizations will be in the 2010-2020 interval. The conclusions and recommendations follows:

1. *We propose, that today's several and scattered R&D-programmes concerning automotive vehicle research within and outside the framework of the PFF in the future are clustered in one comprehensive decision. Present programmes should be finalized according to existing agreements, and new programmes are "phased in" and in a seamless mode. The two Ministries of Industry and Education are recommended to allocate 310 MSEK per year through the four authority parties in the PFF and the industry to commit to a contribution at the present level of 310 MSEK annually. The new strategy strongly suggests the new set up to be a rolling 6 year programme starting 2006. In this way Sweden creates a comprehensive and clustered road vehicle R&D effort, with sustainable financing. Annual evaluations and a right to cancel are, of course, foreseen in the new system.*
2. *The future programmes should be prepared jointly by the four authorities and the four vehicle manufacturers plus the FKG, Swedish Automotive Suppliers. The joint "rigging up" must ensure that the R&D needs of the vehicle industry are matched to the intentions of the authorities, and thus without interference with the latter's purposes and key tasks. In preparation, the new clustered programme with its different program titles should be decided during 2004-05 concerning the content, criteria for execution, financing, and last but not the least, the processes and forums for decisions. The investigators recommend the PFF becomes a Board, and acts as the new forum for final decisions.*
3. *In the new PFF, which then commands a larger scope of activities than before, we recommend that the representation is done by the director-general/managing director, alternatively an individual, who is directly reporting to the "DG/MD" and has the technical responsibility in the organisation.*
4. *The proposed content of the future road vehicle R&D has a collective support. To be included in the new programme of the broader PFF, we propose*
 - *Engine development for reduced CO₂ and reduction of other emissions*
 - *Increased safety, especially so called active safety, with an interaction of vehicle and road systems included*
 - *IT, electrics and electronics with the focus on electric architecture, reliable control systems, info-telecommunication systems and systems for hybrid electric vehicles*
 - *Systems for production, global manufacturing strategy and total reliability, quality and productivity of manufacturing processes*

- *A new, open R&D area, which for example may contain design, light or "mixed" materials, fuel cell systems and finally support for "teknikupphandling" and demonstration vehicles or systems, such as hybrid electric vehicles. The latter must according to the investigators be focused more than the industry has indicated in the interviews.*
 - *A special programme, similar to Fordonsforskningsprogrammet, in order to develop 10-20 suppliers with potential to grow globally.*
5. *R&D should be carried out at technical universities as well as in the industry. Collaboration between academia and companies are assumed in both cases. Vehicle manufacturers and suppliers are very suitable R&D premises when the projects are depending on industry equipment or more or less complete vehicles. The R&D allocations to the universities must be concentrated to a fewer number of large research groups and centres. The investigators have selected and prioritized such places at Chalmers and KTH, as well as niched research groups at departments in Linköping, Luleå and Lund. Among the industrial research institutes, SP and VTI are especially suited for automotive vehicle research.*

Vehicle research has two important purposes, (1) to educate and train competent engineers for Sweden with knowledge from the whole chain of activities such as research/product development and –procurement/production/logistics, and (2) delivery of R&D-results. Notably, Scania and AB Volvo have a very broad competence need among engineers.

The investigators want to focus on the fact that the "Swedish Vehicle Belt" with some 150 000 competent co-workers, whereof 11 000 work with R&D, is a resource which matches other global centres such as Detroit, Paris, Stuttgart or Toyota City. Maximum "belt" travel time from east to west is 2-4 hours with train or by air. The wheels in the map below are Göteborg/Trollhättan and Södertälje/Stockholm.



The "Swedish Vehicle Belt" is a forceful and attractive competence base when participating in European Community R&D programmes, and also in the endeavour to increase foreign investments and R&D activities in Sweden.