Executive Summary

Thirty-two of European's leading automotive companies – including OEMs, Tier1 and Tier2 suppliers, consultants, researchers as well as software developers – launched the EC funded project AUTOSIM (Sixth Framework-Sustainable Transport) on 1 September, 2005.

The 3-year project is supported by the European Commission and coordinated by NAFEMS Ltd and CAE*volution* GmbH (please refer to www.autosim.org). The web-page of AUTOSIM contains information about the project itself, about its objectives, participants, ongoing meetings and workshops.

The ***fundamental objective*** of AUTOSIM is to promote a better and more effective use of simulation technology in the European Automotive industry.
It has two complementary aims:

- firstly to develop "Best Practices"
- secondly to identify the most promising potential "Breakthrough Technologies" for Computer-Aided-Engineering (CAE).

Based on the results of the previously EC-funded project FENET, the AUTOSIM project is centred around **three key technical areas**:

1. *Integration of Simulation into the Overall Design Process*

E.g. integration into CAD, integration of and with suppliers, but also "up-front loading of simulation" into the "early design phases" or "up-front-loading-of knowledge" via Simulation-Data-Management (Fig 1).

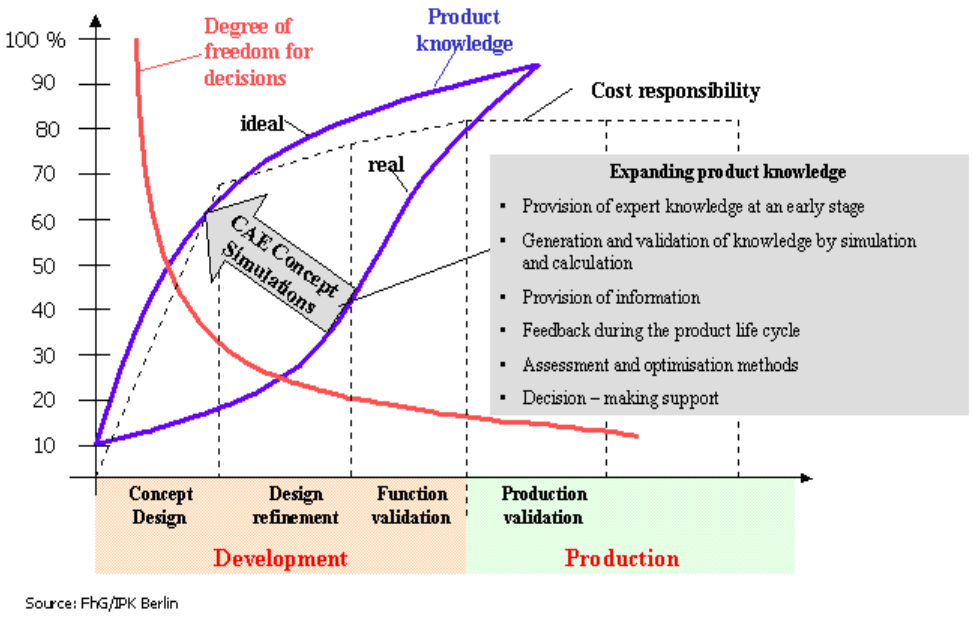

Figure 1: Integration of CAE into the development process

2. *Materials Characterization*

E.g. constitutive models and material data, e.g. for composites, foams or completely new materials and applications like fracture mechanics & durability, modelling connections (Fig 2).

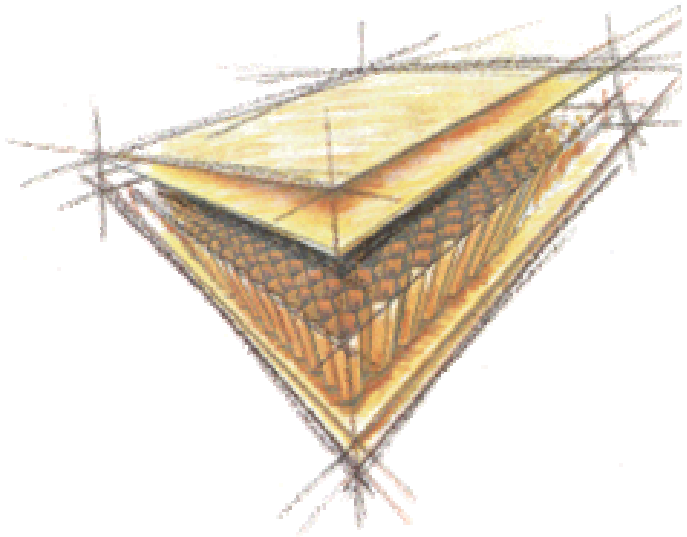

Figure 2: Materials Characterization

3. *Confidence in the Use of Simulation Results*

E.g. Robustness, Uncertainty/ Stochastic (parameter scatter), Validation, Correlation with test, Cost of getting Confidence (Fig 3).

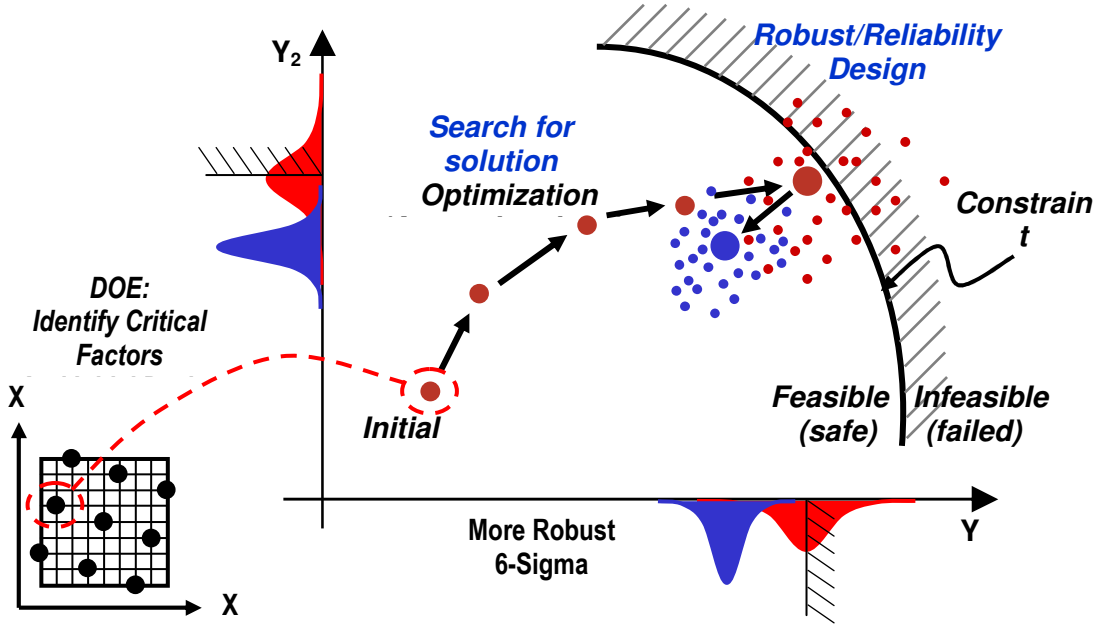

Figure 3: Robust Reliability Design

The AUTOSIM project held its first “Technology Workshop” in Barcelona on 18 January, 2006 and the second one in Munich on 4 May, 2006.

There was wide agreement within the consortium that the 3 identified key topics are not isolated but strongly connected to each other (Fig 4). ***“Integration”*** is connected via Decision Making Processes and Risk Management to Confidence, sharing Simulation-Data (SDM). ***“Confidence”*** needs to rely on a perfect quality and reliability of material data and needs to get input from Integration. ***“Materials”*** need to identify the large number of material models, their usability and adoption of new material models and needs to analyse forming processes, which closes the loop to Integration.

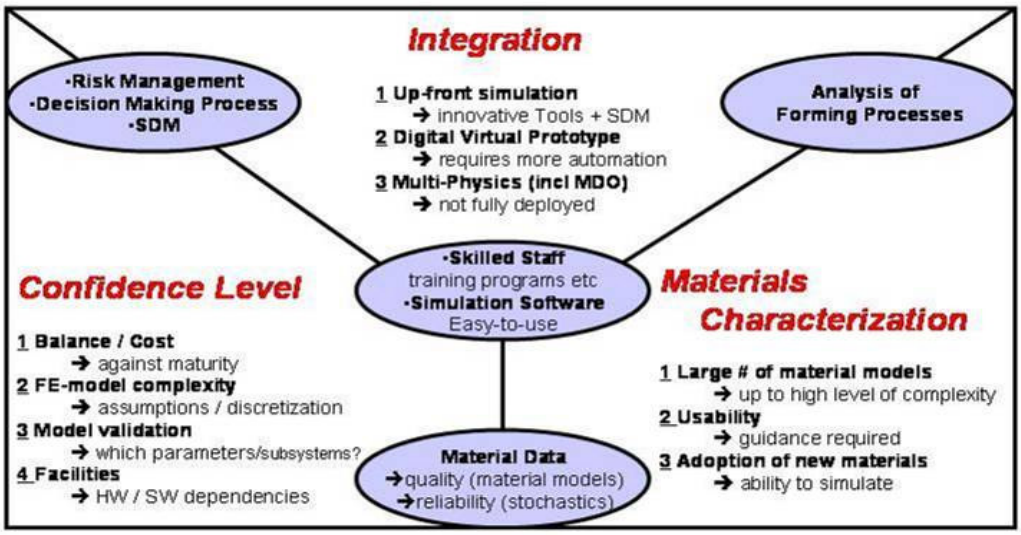

Figure 4: The three key technical areas

In the middle of everything stands the “***human being***”, with the challenge to get appropriate software from the suppliers The software tools should be “easy-to-use”, “state-of-the-art” and compiled with high-performing technologies.

Likewise, the need of corresponding training programmes should be supported by management as only the combination of utilizing high-end-technologies together with basic skills will be the key of success.

The aim of AUTOSIM is to work out
“where we are” (=Best Practices)
and
“where we should aim for” (=Break Through Technologies).