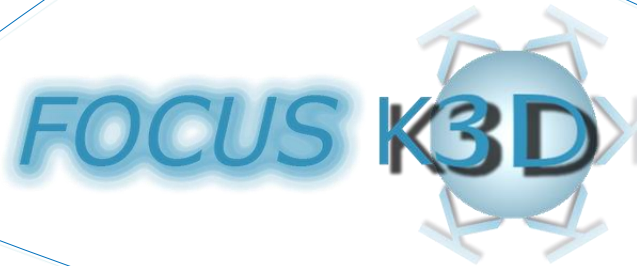


***Foster the Comprehension and Use of Knowledge  
intensive technologies for coding and sharing 3D  
media content***



André Stork  
Fraunhofer IGD  
Darmstadt, Germany

27 May 2009

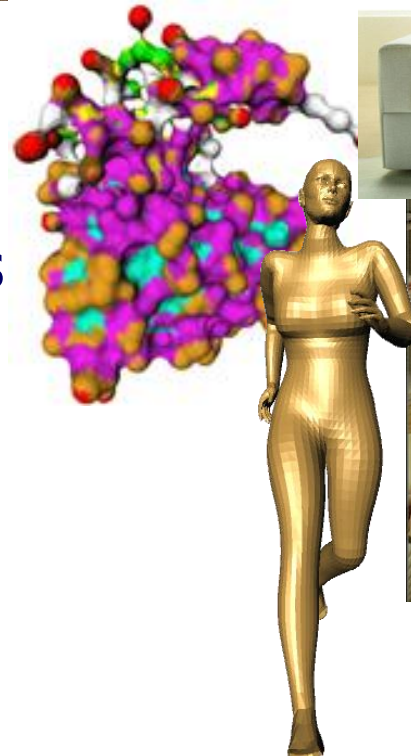
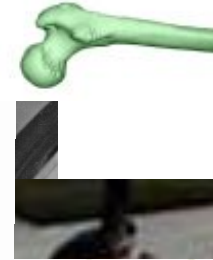
Workshop at VicomTech



# The new dimension of media

## The evolution

- ~ '70s: sound
- ~ '80s: images
- ~ '90s: videos
- ~ now digital 3D models



The **new wave of** highly visual  
3-dimensional content

# FOCUS K3D builds on AIM@SHAPE

- FP6 NoE AIM@SHAPE: the 1<sup>st</sup> big effort towards the coupling shape modelling with knowledge technologies
- 4 years (2004-2008), 13 partners
- tangible results: the *Digital Shape Workbench* with its Shape Repository

- ✓ models with certified properties
- ✓ documentation of models and tools via ontologies
- ✓ promotion of benchmarking

<http://www.aimatshape.net/>

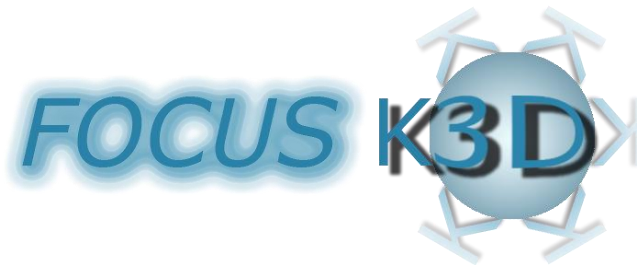


# ***Coordination Action FOCUS K3D***

**FO**ster the **CO**mprehension, adoption and **US**e of **K**nowledge intensive technologies for coding and sharing **3D** media content in consolidated and emerging application communities

*EU FP7 Contract no. 214993 - Key Action: ICT-2007.4.2. Intelligent content and semantics*

**Bianca Falcidieno, Coordinator**  
CNR IMATI-Genova



8 partners  
duration 2008 - 2010

Web site: [www.focusk3d.eu](http://www.focusk3d.eu)

# ***What important terms do we have here?***

*FOCUS K3D bridges two key concepts*

***3D shapes & knowledge***

*and wants to promote  
the adoption of knowledge management tools in*

***'shape-intensive' applications***

# ***What important terms do we have here?***

*FOCUS K3D bridges two key concepts*

***3D shapes & knowledge***

*and wants to promote  
the adoption of knowledge management tools in*

***"shape-intensive" applications***



***knowledge***

***... often translates to semantics ...***

***But what does the term 'semantics' tell us?***

***Semantics is often translated into the term***

***'meaning'***



***But meaning ...***

***... of what ?***

***... for whom ?***

***... for what ?***

# *Perception experiment by Yarbus '67...*



Free examination.

1

***The relevance of information ...***

***... (i.e. 'what is meaningful') ...***

***is defined by the task ...***

***... everything can be meaningful ...***

---

***Which implies?***

***We need to consider all information  
as potentially relevant ...***

***... or in short words: as  
semantics/knowledge!***

# *To be able to...*

...organize, process, share, use  
and re-use, navigate, this  
large amount of complex  
content ...

otherwise data and knowledge  
contained in 3D media is  
useless if it cannot be  
accessed, retrieved and  
easily re-used or  
re-purposed.



**... avoid the 3D data grave !**

# Application Working Groups (AWG)

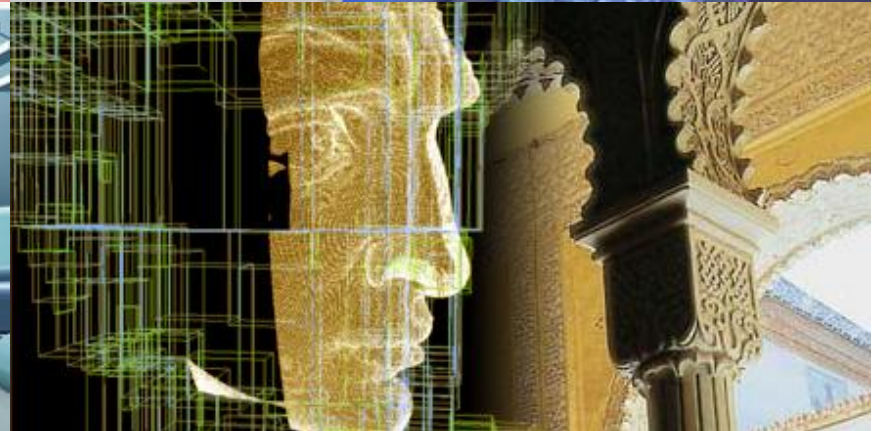
## Medicine & Bioinformatics



## CAD/CAE & Virtual Product Modelling

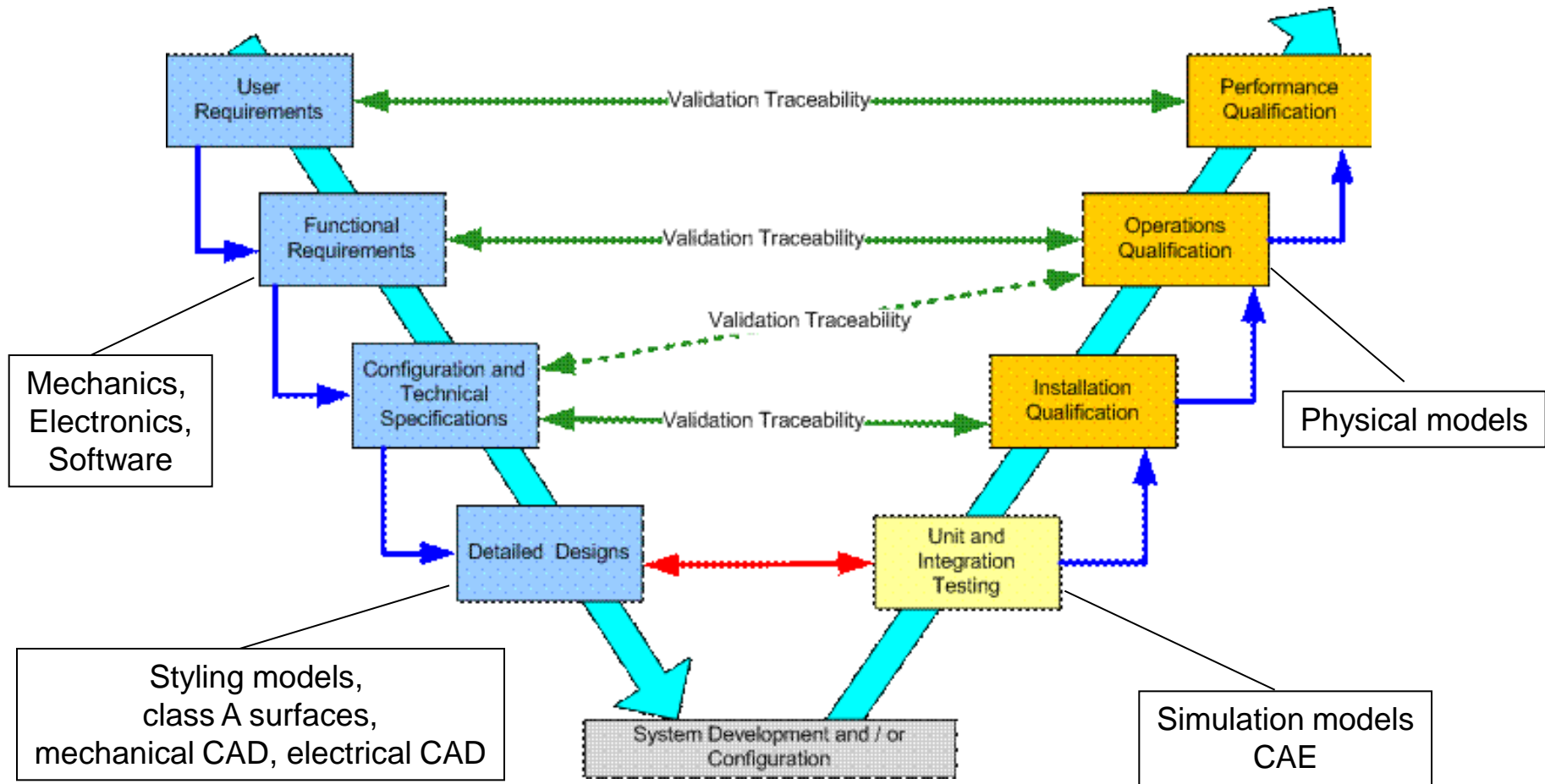


## Gaming & Simulation

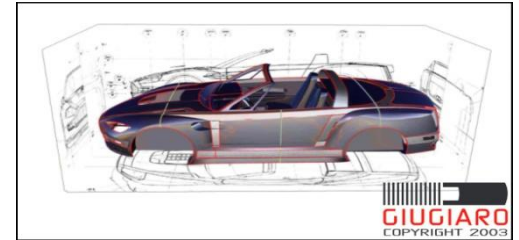
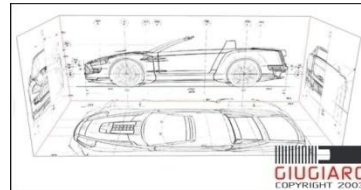
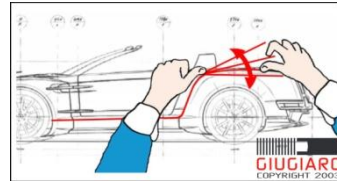
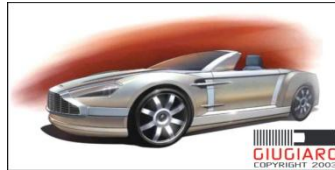


## Archaeology & Cultural Heritage

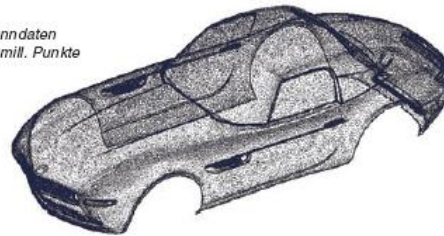
# The V-model of development processes



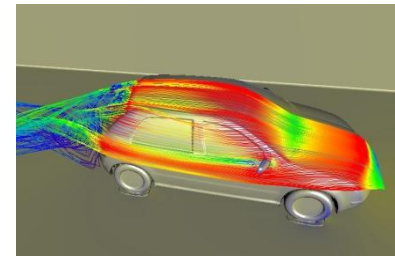
# Types of models along the process



Scannaten  
2.4 mill. Punkte

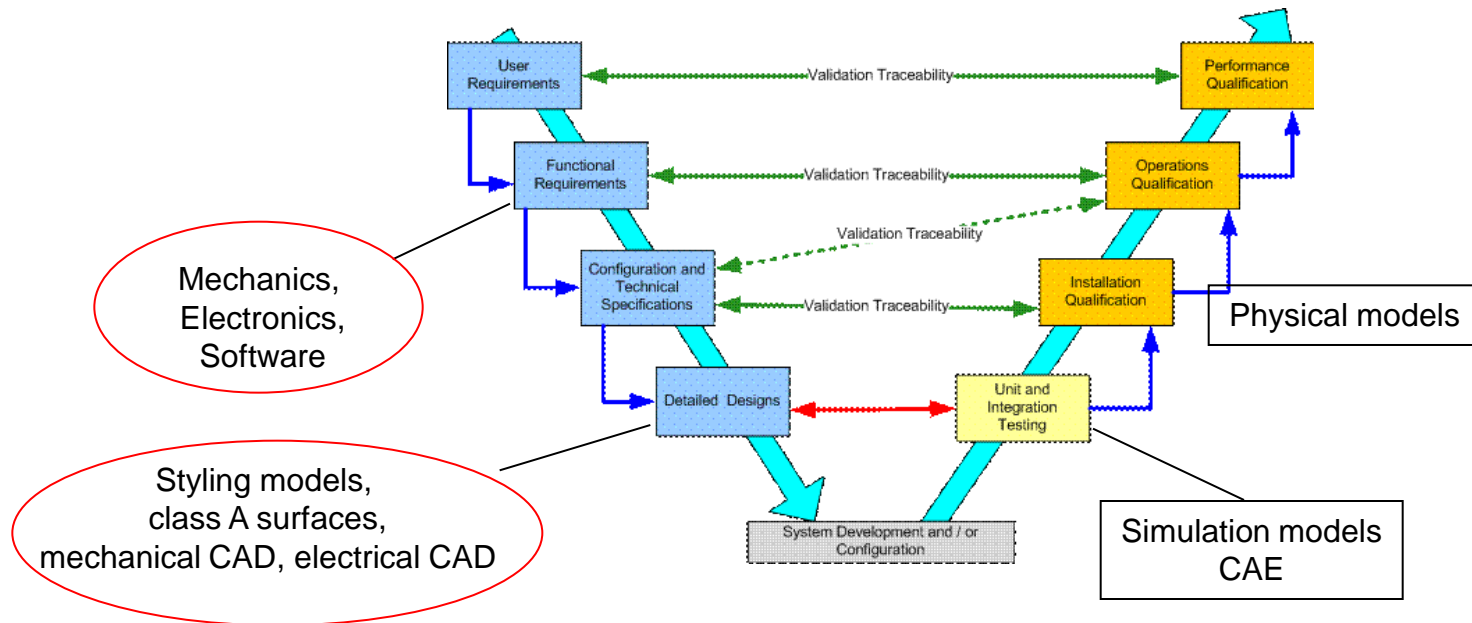


Courtesy Adam Opel AG

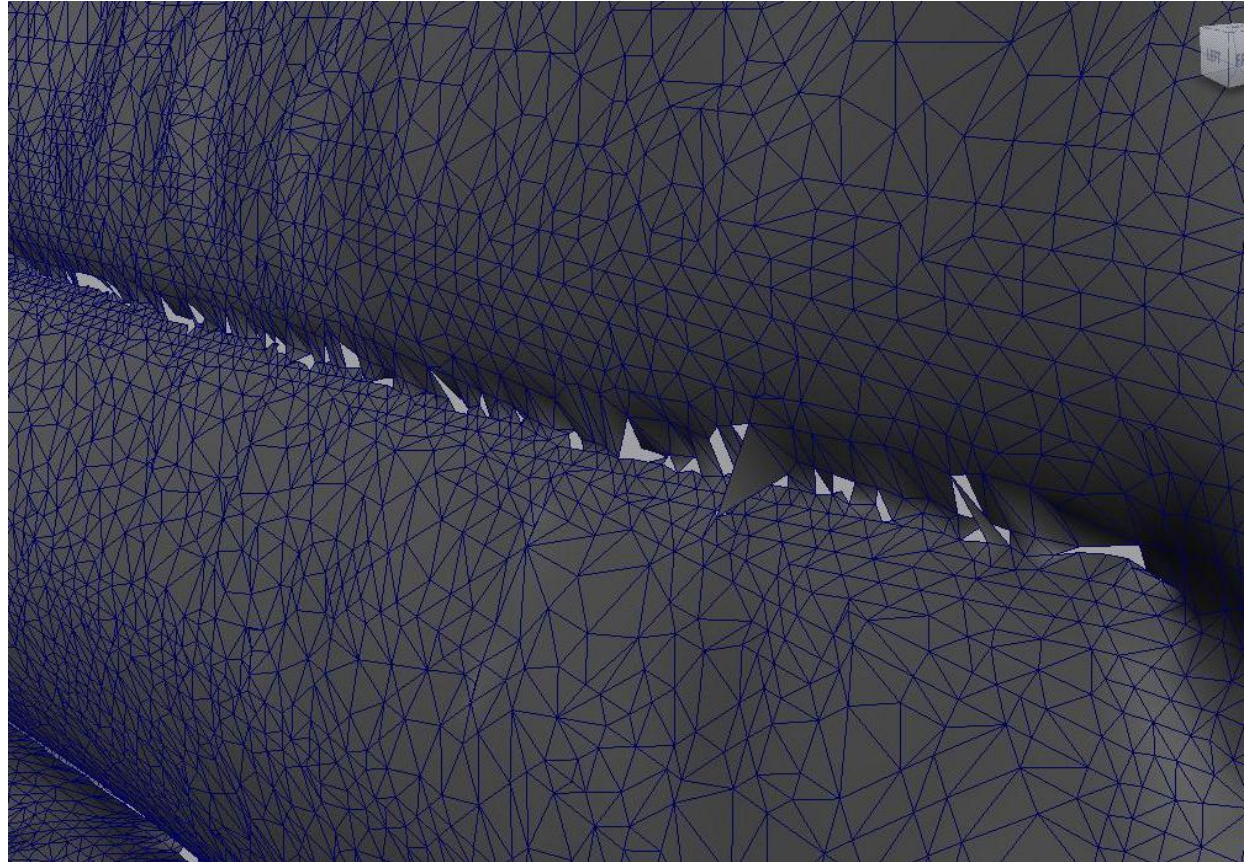




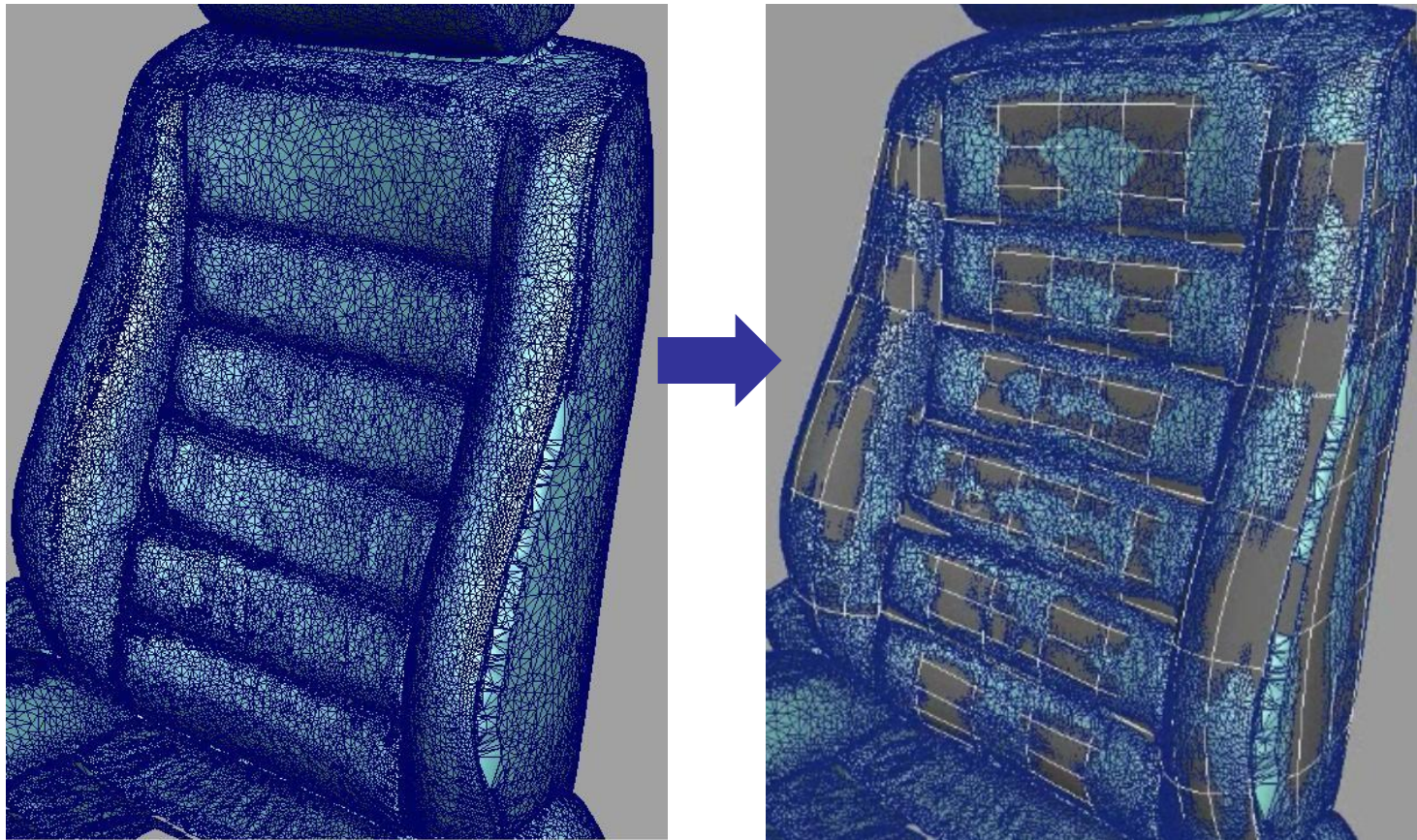
- ➔ Initial foci for FOCUS K3D in this AWG:
  - ✓ New semantically rich modeling approaches, i.e. generative modeling
  - ✓ Functional DMU, i.e. semantic integration of mechatronics (shape and function)



# ***What is (the meaning of) this ?***

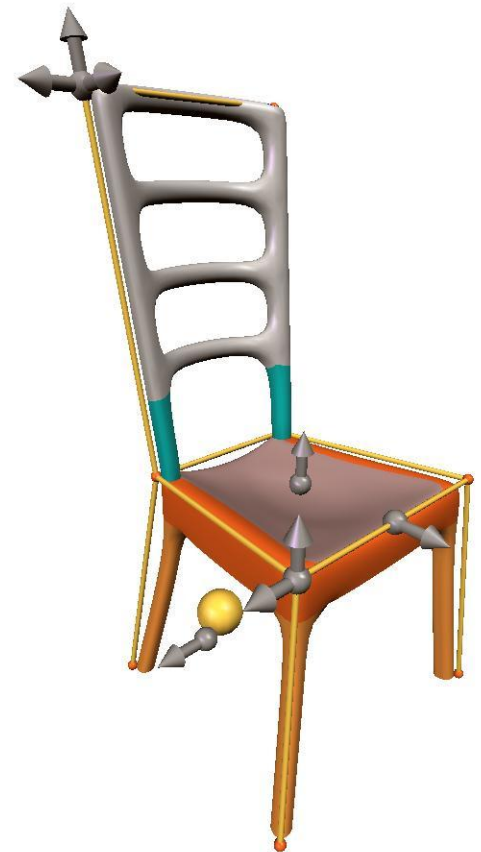


➤ To give you some more context ...





- Now imagine we had a semantically rich description of 3D objects ...
- ... and a rule base how to generate geometry from the description ...
- ... which contains not only the shape but also covers the manipulation possibilities ...

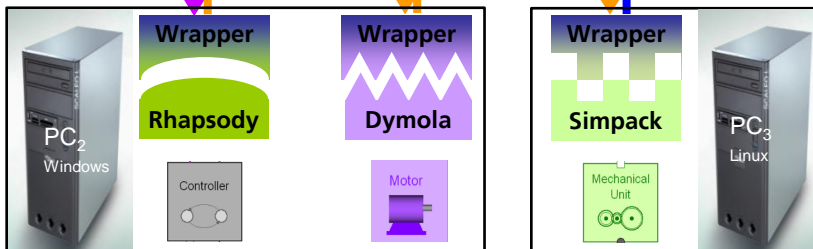
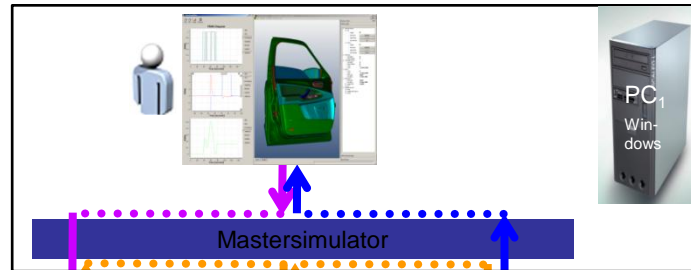
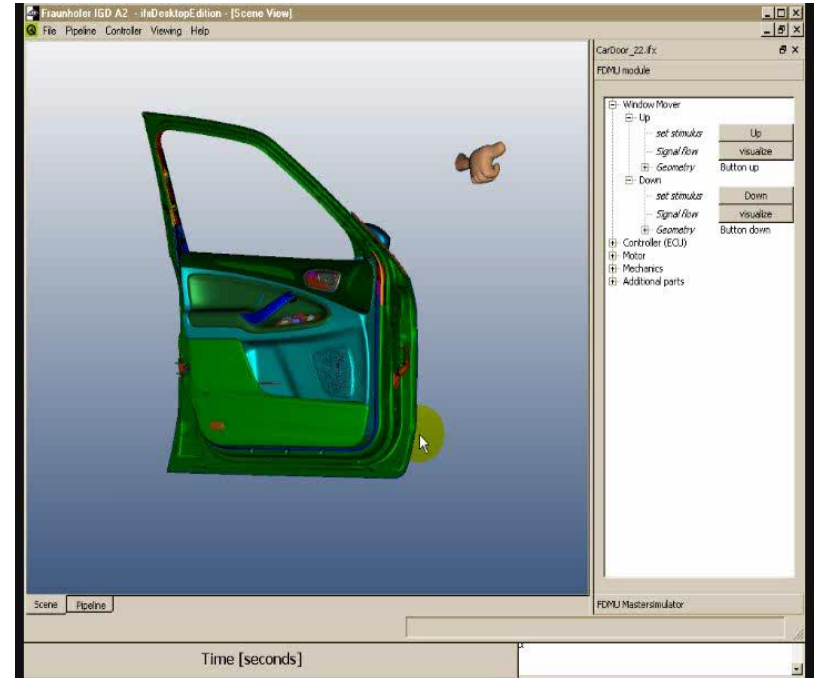




➤ ... then we could change the ‚meaning‘ ...  
When is a chair a bed / a bed a chair?

# Functional Integration

➔ What is the 'meaning' of that?



➔ It tells the engineer whether the system works.

# ***FOCUS K3D goals***

- Requirements of the user communities
  - ✓ e.g. 3D retrieval and re-use
- Current practices and analysis of the needs for advanced 3D content modelling and processing
- Research roadmaps
- Openness to a larger audience



# *Contacts and Keyplayers*

## ➤ CAD/CAE vendors:

- ✓ Dassault Systems, USA
- ✓ Autodesk, USA
- ✓ Intergraph Deutschland, Germany
- ✓ ...

## ➤ CAD users

- ✓ Volkswagen AG, Germany
- ✓ Adam Opel GmbH, Germany
- ✓ Siemens AG, Germany
- ✓ ...

## ➤ Academics

- ✓ Institute of Computer Graphics, TU Graz, Austria
- ✓ Technical University Kaiserslautern
- ✓ Technische Universität Darmstadt, Germany
- ✓ University Grenoble

## ➤ How to join:

✓ Contact us through the web portal

[www.focusk3d.eu](http://www.focusk3d.eu)

✓ or mail to

≈ The AWG leaders:

- Med&Bio: [Frederic.Cazals@sophia.inria.fr](mailto:Frederic.Cazals@sophia.inria.fr)
- **CAD/CAE/PM:** [Andre.Stork@igd.fhg.de](mailto:Andre.Stork@igd.fhg.de)
- G&S: [Wolfgang.Huerst@cs.uu.nl](mailto:Wolfgang.Huerst@cs.uu.nl)
- CH: [Marios.Pitikakis@cereteth.gr](mailto:Marios.Pitikakis@cereteth.gr)

≈ The Project Coordinator:

- [Bianca.Falcidieno@ge.imati.cnr.it](mailto:Bianca.Falcidieno@ge.imati.cnr.it)

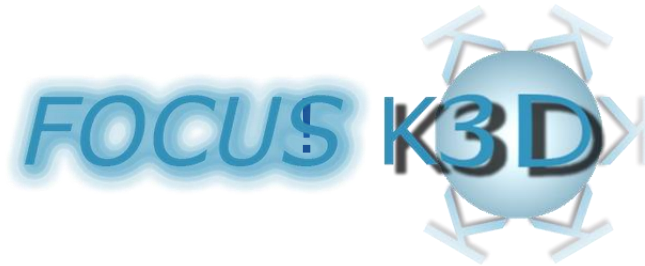
## ➤ Why to join:

- **Attend** events, workshops and get insights on open problems in knowledge intensive 3D media
- **Access resources and services** (STAR reports, tutorials, documents) and **benefit of demos and training sessions** on knowledge-based research infrastructures (e.g. DSW)
- **Establish new** research and business **partnerships**
- **Share individual problems** related to 3D content and **influence new technological developments and research directions**

- Go-3D 2009: Go for Innovation
  - ✓ Workshop on challenges in 3D content for Virtual Product Modeling
  - ✓ 1st September, Rostock, Germany

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We would be very glad to welcome you in



Please contact me after the workshop.

Thanks for your attention!