

4. KULI User Meeting 2003

June 25-27



ENGINEERING CENTER STEYR
GmbH & Co KG

Steyr - Austria

KULI Development Activities



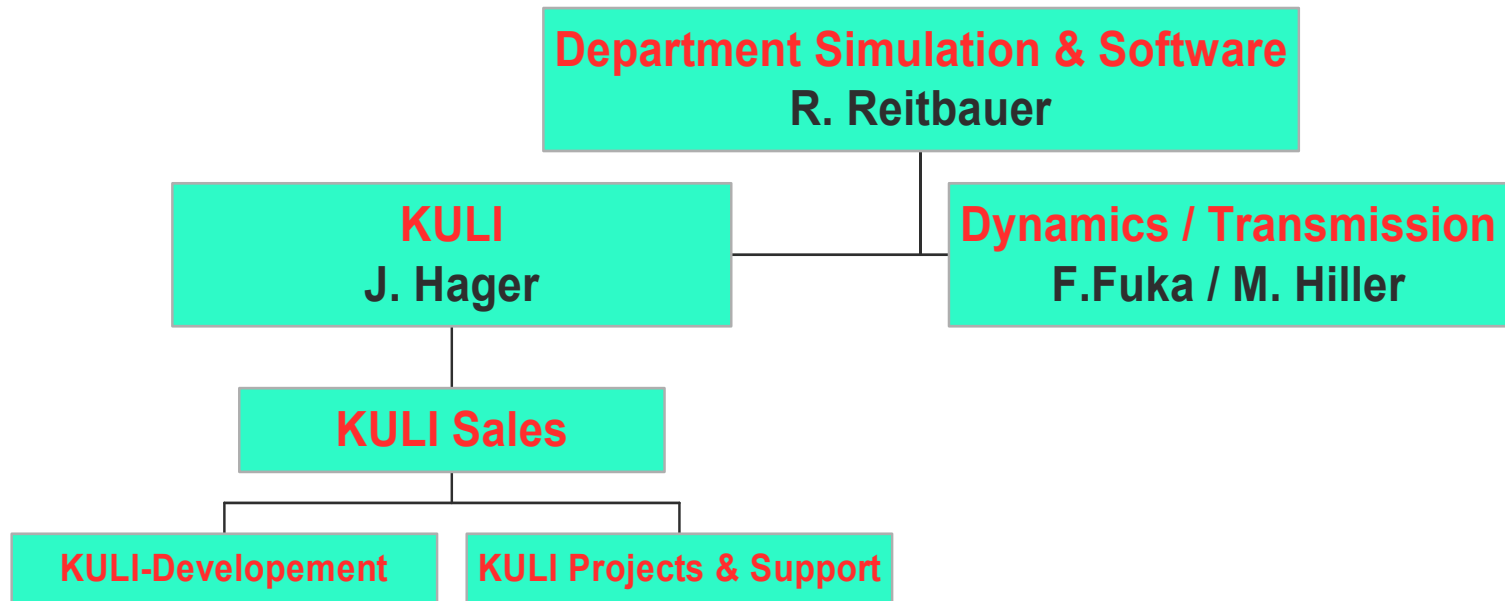
ENGINEERING CENTER STEYR
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Rudolf Reitbauer

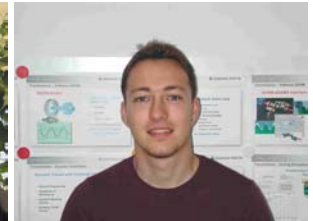
Content

- **KULI-Team-Organization**
- Heat Management Consortium Step 4
- Competence Center viv (Graz)
- Working Groups

Simulation Department SimSof



KULI-Team



Dev

Ser



Pool of Ideas

- **brainware**
- **customer feedback by support-hotline (i.e. errors, extensions)**
- **customer wishes (i.e during acquisitions, test installation, trainings)**
- **trainings (ECS or on site)**
- **diploma theses (universities)**
- **market research (internet, papers, literature, competitors)**
- **conferences / fairs**

- **simulation services (external and in MAGNA)**
- **methodical development (custom made processes)**

- **+ WORKING GROUPS**

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Consortium Members 2003/2004



Step 4 Topics

- 1) Influences /Effects Analysis
- 2) Automated Concept Studies
- 3) Engine-Vehicle Interaction Concept
- 4) Subsystems
- 5) Generic Components
- 6) N-dimensional Maps
- 7) Software Interfaces
- 8) Influences of Auxiliaries on Fuel Consumption
- 9) Truck-, Car-, Tractor Thermodynamics
- 10) CFD / KULI direct Interface
- 11) Rear/Boxer-Engine

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viv-subjects

Area 2

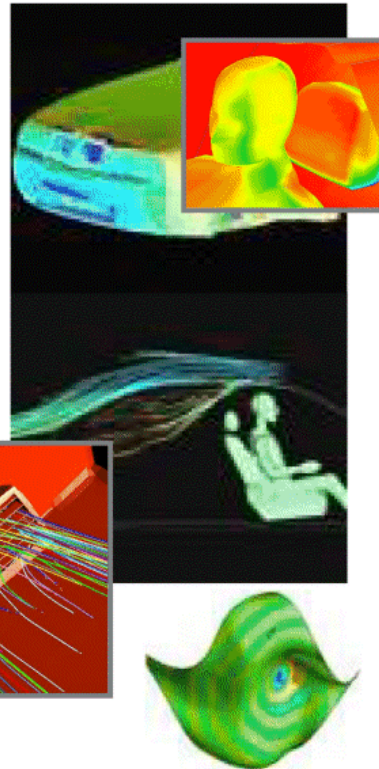
Thermal Management And Fluid Dynamics

Cluster Underhood Flow

A2_T1	Modelling of Thermal Behaviour of Engine, Drive Train and Exhaust System
A2_T2	Surface Flow Simulation in the Engine Compartment and around/under the Car Body
A2_T3	Radiation Modelling for Underhood Thermal Simulation
A2_T4	Coupling of 0-d, 1-d and 3-d Simulation Tools

Cluster HVAC

A2_T5	HVAC - System
A2_T6	HVAC – Passenger Compartment



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At present we participate in:

- **Applikationshilfe (engine model, neuronal networks)**
FVV Germany (University of Kassel, RWTH Aachen)
- **Instationäre Kühlsystemoptimierung (transient simulation)**
- **Optimierte Kühlluftführung (cooling air flow)**
FVV Germany (IVK Stuttgart)
- **Integrated System Optimization Consortium**
ISOC (University of Maryland/USA)

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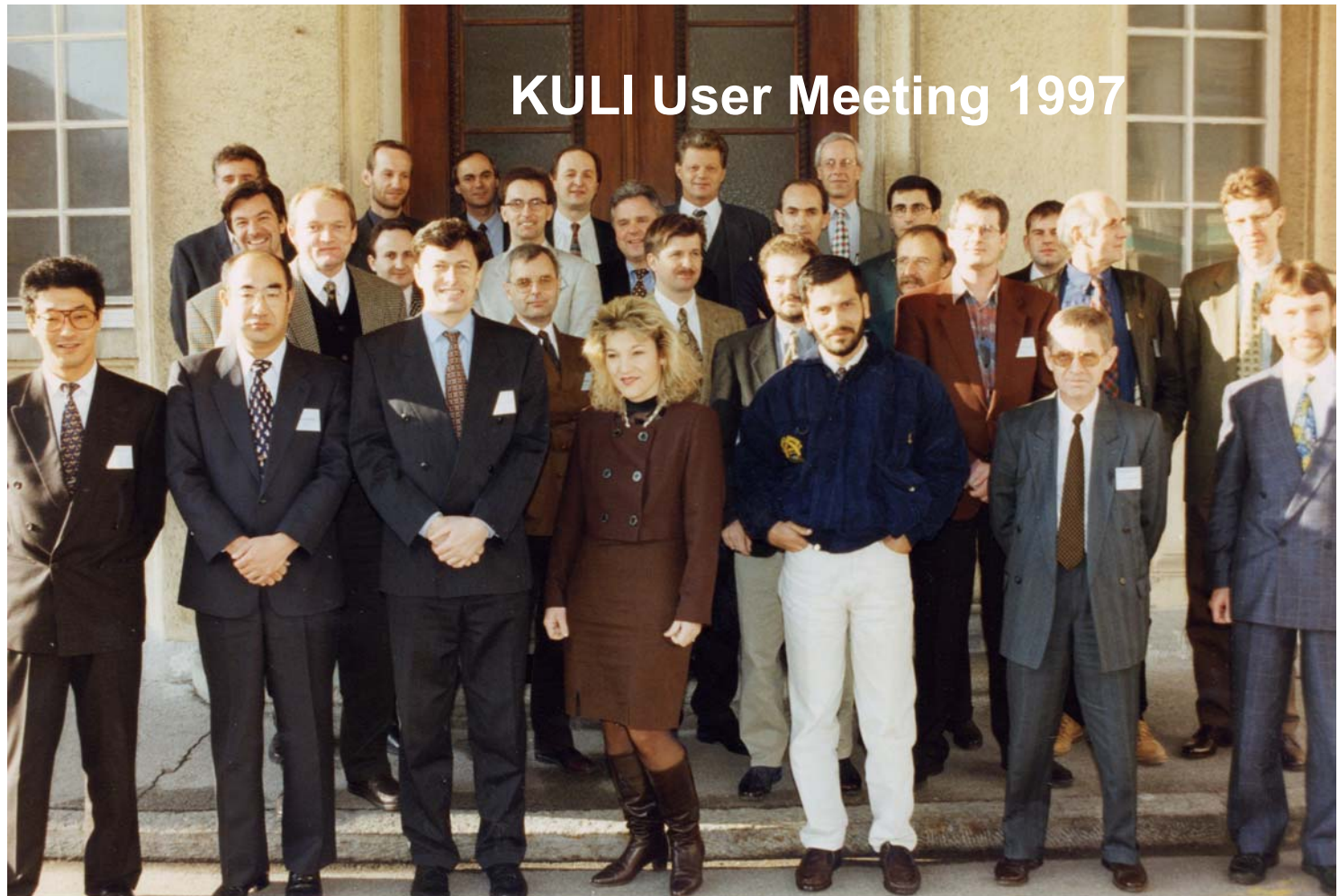
! ENJOY THE CONFERENCE !

4. KULI User Meeting Summary



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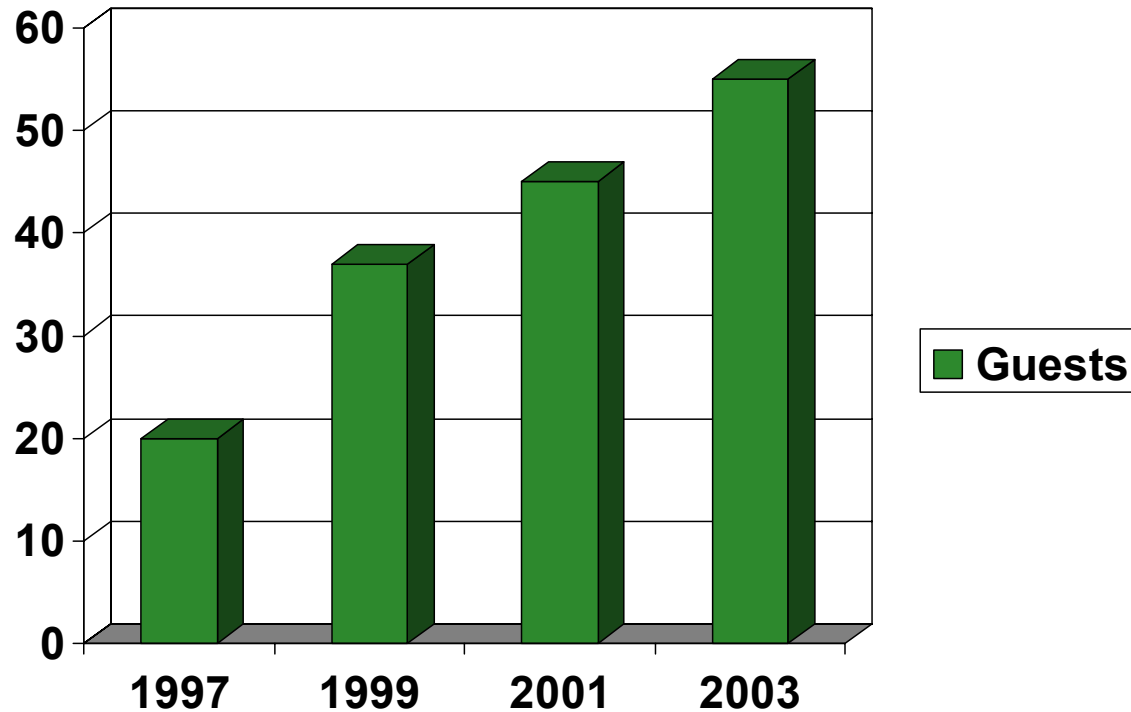
KULI User Meeting 1999

KULI User Meeting 2001



KULI User Meeting 2003

Steyr-KULI-User Meeting Acceptance



Near Future activities:

- **Constant development and extension of KULI**
 - Engine model
 - HVAC system
 - Transient simulation
 - Components modeling
 - Software handling
- **New technologies and topics**
 - Fuel cell systems
 - Heat management consortium step 5
 - Electronic controls
- **Services and projects straight forward (ev. component testing..)**
- **New geographic areas and USA-User-group**

! Thank you for joining us !



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The KULI-Team