
The Fraunhofer Institute for Experimental Software Engineering

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The Fraunhofer-Gesellschaft e.V.

Named after:	Joseph von Fraunhofer (1787-1826) a successful researcher, inventor and entrepreneur
Role of the Fraunhofer Gesellschaft:	Germany's leading organization for applied research and technology transfer 58 institutes with approx. 12.500 employees
Size: Funding Volume: (as of 2004)	about 1.3 billion €, consisting of: <ul style="list-style-type: none">• 1/3 base funding (government)• 1/3 industrial projects• 1/3 public sector projects

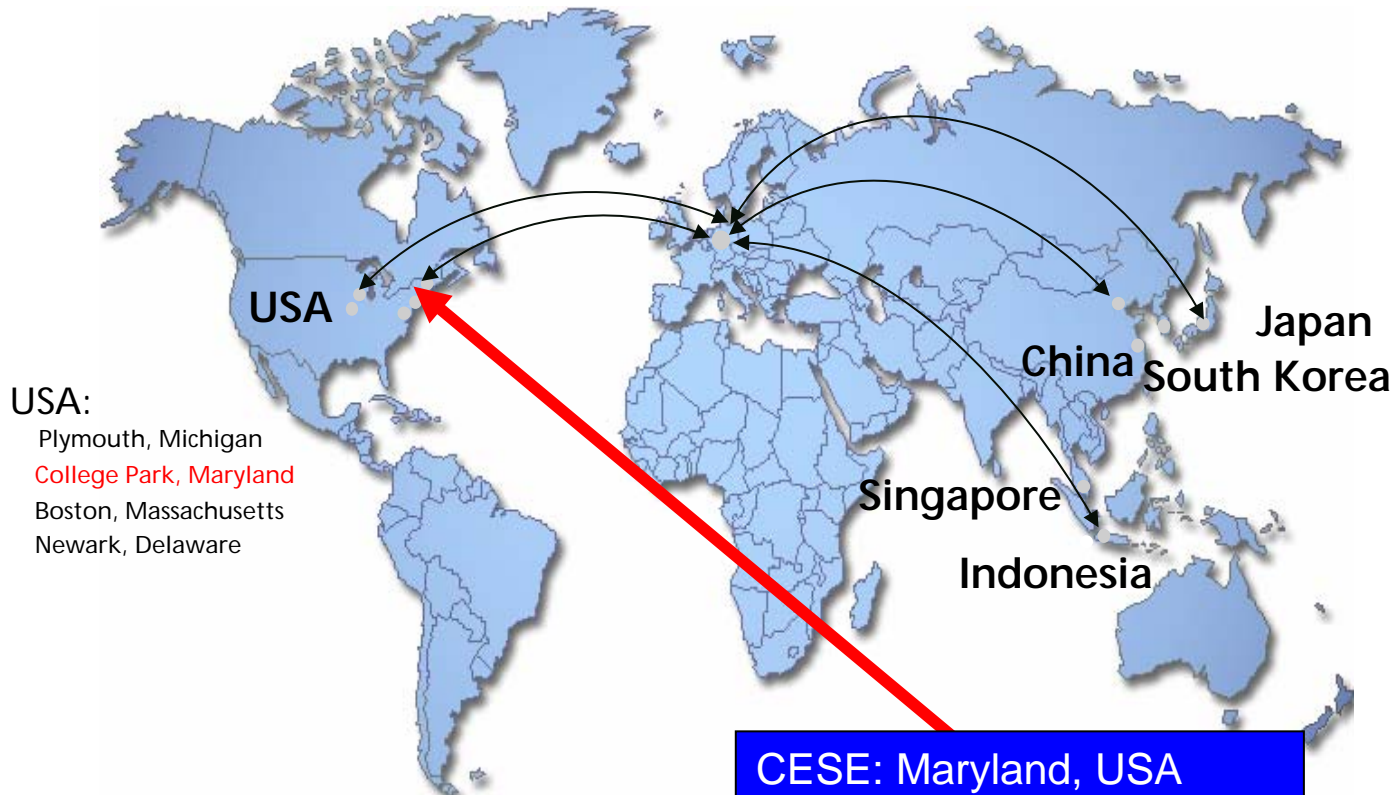
Fraunhofer research units in Germany:

80 research units
at approx. 40 locations

- Institutes
- Branches of Institutes, Research Institutions, Working Groups, Branch Labs, Application Centers



Fraunhofer IESE: International



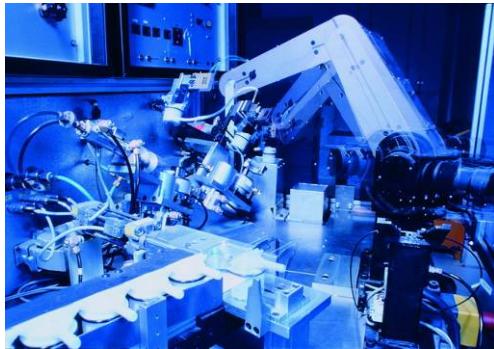
Presentation of Fraunhofer IESE

Fraunhofer IESE

- Applied Research and Technology Transfer
 - approx. 180 employees
 - 11 Million Budget (75% ext. funds)
- International Positioning
 - USA, Japan, India, Hungary
- Innovative Cooperation model
 - **Research Labs**
- High International Reputation in “Systems & Software Engineering”
 - **No. 1 in Europe (JSS, 2005)**

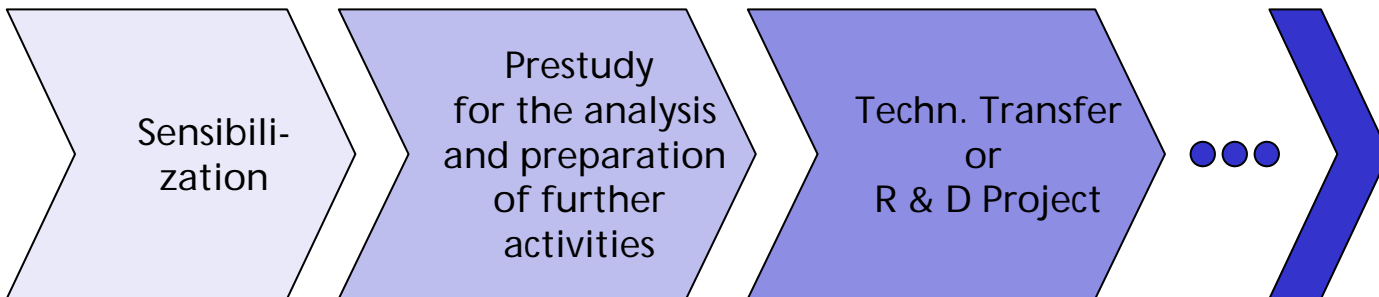


Our Approach



- Software development must be understood as an engineering activity
 - “Experimental” learning cycles must be established (observing - modeling - transferring - observing ...)
 - Experimental learning must be supported through measurements
- in **industrial practice**, this makes it possible to
- plan/manage/control software processes
 - successfully select and introduce innovative technologies
 - establish effective quality management systems
- in **research**, this makes it possible to:
- work on application-oriented research issues
 - practically evaluate new technologies

Forms of Cooperation



- Lectures
- Initial visits

- Structured interviews
- Check of process handbooks and other available data

- Concurrently:
 - Training
 - Coaching

- Regular refocusing on new topics in subsequent projects

IESE Expertise

BOSCH

BMW Car IT



DAIMLERCHRYSLER

SIEMENS



KEIPER

HITACHI
Inspire the Next

Valeo

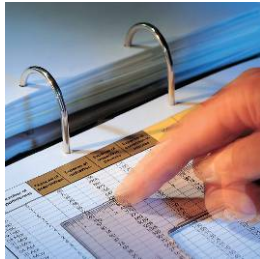


c a r m e q

software & systems

- Experience in the automotive domain from projects with
 - Audi, BMW, BMW Car-IT, Bosch, Bosch Blaupunkt, Carmeq, DaimlerChrysler, Keiper, Hitachi, Siemens-VDO, Valeo
- IESE core competence
 - Requirements and Usability Engineering
 - Product Line Architectures
 - Component Engineering
 - Processes & Measurement
 - Security & Safety
 - Inspections & Testing
 - Experience Management
 - Education & Training in SE

PAM Competences



Processes & Measurement (PAM)

- Goal-oriented measurement: **GQM**
- Descriptive process modeling: **Spearmint**
- Goal-oriented product/process assessment: **FAME** (ISO/IEC 15504-compliant process assessment method), Subcontracting, COTS Acquisition, Risk Management

Thank you for your attention!



Fraunhofer Institut
Experimentelles
Software Engineering

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Presentation of Fraunhofer IESE

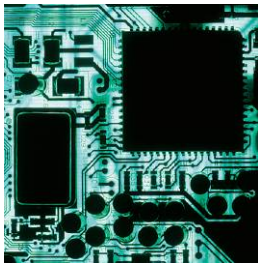
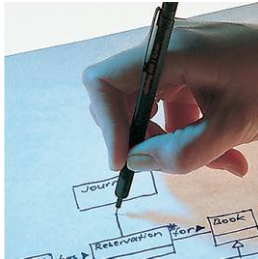
Backup slides

Internationalization



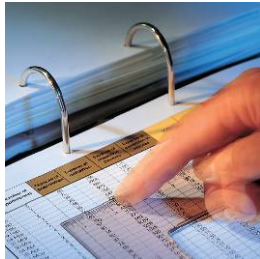
- Europe
 - Hungary (BUTE): Aml
 - Ireland (U. Limerick): SE
 - etc.
- USA
 - Fraunhofer Center Maryland
 - BMW/U. Clemson: Automotive SE
- Asia
 - Japan (Ricoh, METI, Hitachi, Fujitsu, Jaxa):
Product Lines, Measurement
 - China (PC Chair - SE 2006, Siemens)
 - India (Siemens): Measurement
 - Korea (University of Busan)
- ISERN (50 partners worldwide)

IESE Core Competences (1/3)



- **Requirements and Usability Engineering (RUE)**
Requirements Engineering, Usability Engineering:
Multi-Modal Interfaces, e.g., Aml
- **Product Line Architectures (PLA)**
Architecture recovery, Architecture development
& evaluation, Scoping & modeling of domains &
decisions, PuLSE
- **Component Engineering (CE)**
Component-based software development, KoBRA

IESE Core Competences (2/3)



- **Processes & Measurement (PAM)**

Goal-oriented measurement: **GQM**, Descriptive process modeling: **Spearmint**, Goal-oriented product/process assessment: **FAME**, Subcontracting, COTS Acquisition, Risk Management



- **Testing & Inspections (TAI)**

Systematic inspection techniques: **PBR**, reliability testing, **integrated inspections & testing strategies**



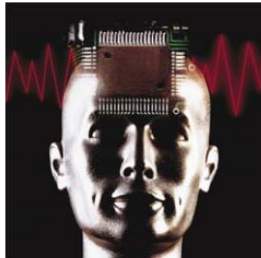
- **Security & Safety (SAS)**

Security Assessments: **Crocodile et al**, EF for Security, Automated checking of infrastructures, Safety analysis, **Dependability testing**

IESE Core Competences (3/3)



- **Experience Management (EM)**
SPI planning & setup, EF buildup and
Organizational Learning: **Experience Factory**



- **Education & Training (EAT)**
Evaluation and Certification, Technology-enabled
Learning, Simulation-based learning and decision
support, **e-Learning & -Coaching: e-Workshop**

Presentation of Fraunhofer IESE

Some references

ABB Corporate Research Ltd.	HealyHudson	Polarion GmbH
Allianz Lebensversicherungs-AG	Hitachi Ltd.	Polizei Rheinland-Pfalz
andrena objects AG	IBS AG	proALPHA Software AG
Atmos Medizintechnik GmbH	ICT Solutions AG	PSI Logistics
Audicon GmbH	JAXA	RICOH Image Processing
Axess AG, Salzburg	Keiper Recaro Group	Robert Bosch GmbH
Blaupunkt GmbH	Lion Bioscience	SAP AG
BMW AG	Lucent Technologies Network Systems GmbH	SAS Institute GmbH
BMW Car-IT GmbH	market maker Software AG (part of the vwd group)	Siemens AG
Böhringer Pharma GmbH & Co. KG	MBtech GmbH	Siemens-VDO
Carmeq GmbH	METI/IPA	Stadt Kaiserslautern
DaimlerChrysler AG	Microsoft AG	Stadtkasse Köln
Deutsche Post IT Solutions GmbH	Ministerium der Justiz Rheinland-Pfalz	Stadtsparkasse Kaiserslautern
Deutsche Telekom AG	Ministerium des Innern und für Sport Rheinland-Pfalz	Tenovis
Diamant Software GmbH&Co.KG	Ministerium für Wirtschaft, Verkehr, Landwirtschaft und Weinbau Rheinland-Pfalz	Testo AG
E-plus	Ministerium für Wissenschaft, Weiterbildung, Forschung und Kultur Rheinland-Pfalz	T-Mobile GmbH
ESA	Mitsubishi	T-Online GmbH
EUROCAT Institute for Certification and Testing GmbH	Nokia GmbH	T-Systems Enterprise Services GmbH
Fiducia IT AG		Uniserv GmbH
FinanzIT GmbH		Valeo Schalter und Sensoren GmbH
Fujitsu Enabling Software GmbH		Wellington Partners Venture Capital GmbH
Giesecke & Devrient GmbH		