

Informatics as the Key Driver of a University's Strategic Development Plan

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**Vice-President Research
and Junior Academics**



University of Paderborn

■ Faculties:

- Arts and Humanities
- Business Administration and Economics
- Science
- Mechanical Engineering
- Computer Science (23 Profs) , Electrical Engineering and Mathematics

■ Research:

- Central Research Facilities (e.g. HNI, PC², PACE)
- 4 DFG Collaborative Research Centers
- Fraunhofer Institutes
- Technology and Knowledge Transfer (e.g. s-lab, C-LAB, DMRC)

■ Research Profile:

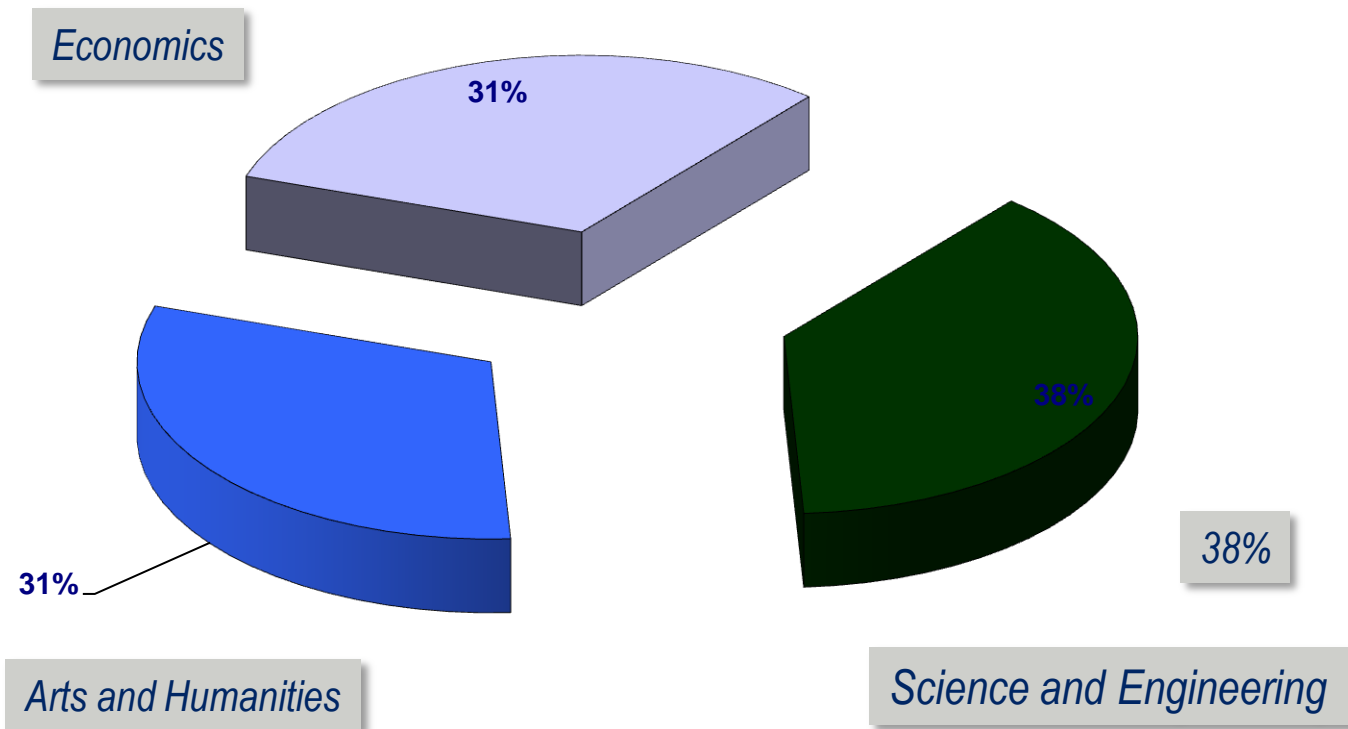
- Mechatronics and Embedded Systems
- Optoelectronics and Photonics
- Material Sciences
- Scientific Computing
- Media Sciences
- Medieval History
- Teacher Education

■ Figures 2013:

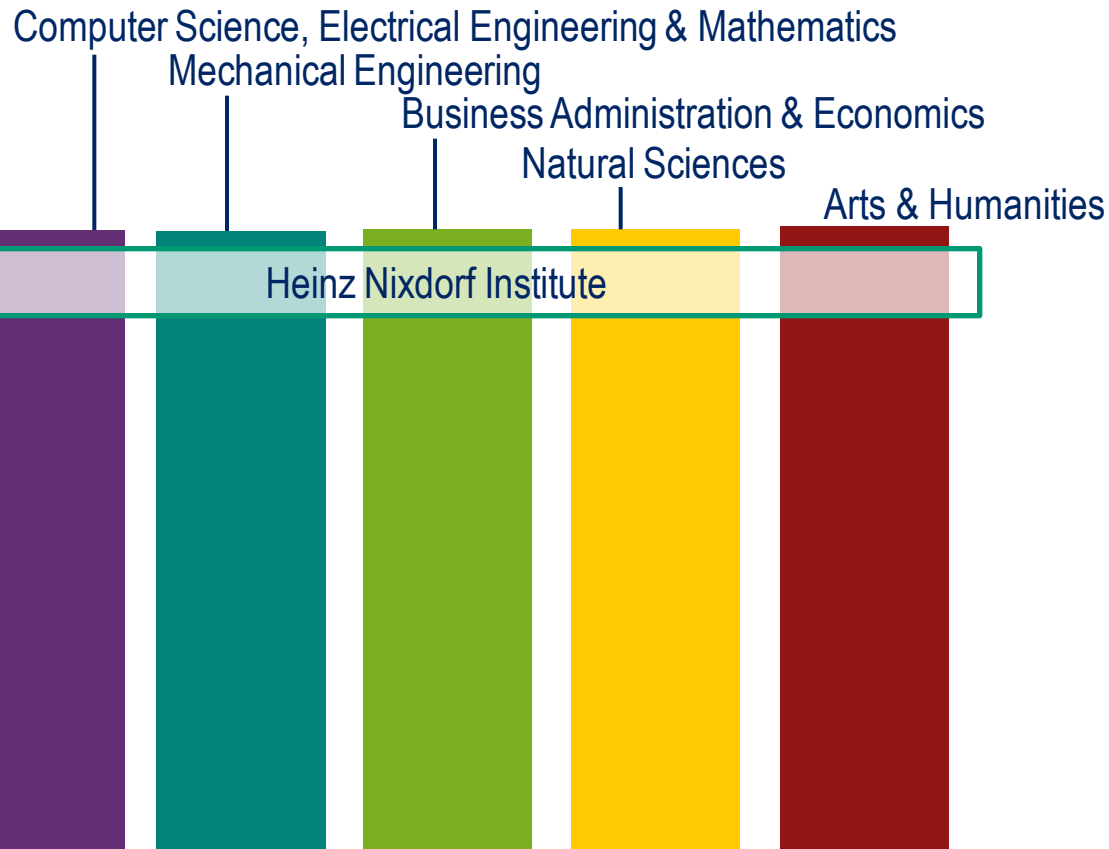
- Students: ca. 19.500 (ca. 1600 in CS)
- Staff: ca. 2000 (210 Professors)
- Total Budget: ca. 190.000.000 €
- (Re-) Founded 1972



Student Population Percentagewise



Interdisciplinary Focus



*Heinz Nixdorf
Computer science pioneer and
businessman
(1925–1986)*

Vision in the 1980's

- Computer science and engineering as motors for societal growth and innovation which led to 100 million Deutschmark donations for research (7 endowed chairs)

Heinz Nixdorf Institute



HEINZ NIXDORF INSTITUTE
University of Paderborn

The Heinz Nixdorf Institute is a research centre within the University of Paderborn. It was founded in 1987 initiated and supported by Heinz Nixdorf. By doing so he wanted to create a symbiosis of computer science and engineering in order to provide critical impetus for new products and services. This includes interactions with the social environment.

Research Areas of the Institute:

- Algorithms and Complexity
- Business Computing, especially CIM
- Contextual Informatics
- Control Engineering and Mechatronics
- Design of Distributed Embedded Systems
- Product Engineering
- Software Engineering

Head Count:

- 200

Interdisciplinary Focus

Computer Science, Electrical Engineering & Mathematics
Mechanical Engineering
Business Administration & Economics
Natural Sciences
Arts & Humanities

Heinz Nixdorf Institute

Collaborative Research Centres

Paderborn Center for Parallel Computing - PC²

Institute for Industrial Mathematics - IFIM

Technology Transfer Labs

Vision in the 1980's

- Computer science and engineering as motors for societal growth and innovation which led to 50 million Deutschmark donations for research

 **Fraunhofer**
IPT

Cur
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Heinz Nixdorf
Functionally Graded
Structures on the Basis of
Computer science pioneer and
Thermo-Mechanically Coupled
Phenomena
businessman
(1925 – 1986)

FG

PACE Paderborn Institute for Advanced Studies in Computer Science and Engineering



International Graduate School *Dynamic Intelligent Systems*

- 10 years experience running international, interdisciplinary Ph.D. programmes
- Industry-sponsored projects
- > 15 applications per Ph.D. project
- > 150 applications per year overall
- > 80 Ph.D. students from > 20 countries across all five faculties
- Average time to dissertation < 40 months

C-Lab - Cooperative Computing & Communication Laboratory



Founded in 1985 under the auspices of the State of North-Rhine Westphalia, the Cooperative Computing & Communication Laboratory (C-LAB) is a joint research and development laboratory operated by Atos and the University of Paderborn. "Cooperative computing & communication" is C-LAB's general field of operation. This field covers computer applications and computer technologies ("Computing"), and computer-assisted communication ("Communication").

Research Areas:

- Business Informatics
- Computer Graphics, Visualization, and Image Processing
- Computer Networks
- Contextual Informatics
- Database and Information Systems
- Design of Distributed Embedded Systems
- Knowledge-Based Systems
- Software Engineering

Head count:

- 60

s-lab – Software Quality Lab



s-lab is a multi-private-public partnership institute for knowledge and technology transfer between academia and industry. The open structure of s-lab enables cooperation with many partners.

Research Areas:

- Model-based Software Development
- Domain-specific Languages
- Software Process Models
- Software Architectures
- Testing and Simulation
- Information Extraction and Retrieval
- Knowledge-based Systems

Head count:

- 20



HJP CONSULTING.



Orga Systems.



dSPACE

UNITY

WINCOR
NIXDORF

PC² – Paderborn Center of Parallel Computing



Competence center for parallel and distributed computing since 1991

Goal: Foster and explore efficient use of parallel and distributed systems

Mandate in research and service

Funding from regional and federal government, industrial and EU-projects

Research: ~8 PhD students, 2 post docs in 10 projects

Research Areas:

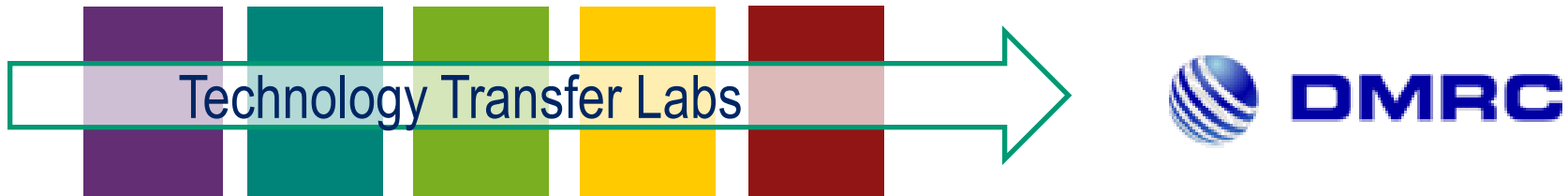
- Cloud computing
- Green IT
- Distributed and parallel computer systems

Head count:

- 15



DMRC – Direct Manufacturing Research Center



The DMRC is a proactive collaboration of key technology stakeholders who have a common interest in advancing Rapid Prototyping technology into dependable, production rugged Direct Manufacturing technology (DM).

Research Areas:

- Automotive Lightweight Construction
- Applied Mechanics
- Computer Application and Integration in Design and Planning
- Design and Drive Technology
- Material Science
- Mechanical and Environmental Process Engineering
- Polymer Engineering
- Product Engineering

Head count:

- 15

Cluster Intelligent Technical Systems

The Cluster intelligent technical Systems is being expanded by a regional corporate strategy with projects of about 100 million Euros. As part of a nation-wide competitive funding program, the cluster has been accepted in January 2012.

For engineering, electrical and electronic industry and the automotive supplier industry, it is the aim to enlarge their position in global competition and to protect the added value as well as the employment. The focus is on innovation leap, away from mechatronics to systems with inherent partial intelligence.

173 regional participations:

- 127 Companies
- 16 Universities and University-affiliated centres of competence
- 30 industrial pressure groups



Key Lessons Learned

- **Special History, to some extent lucky coincidence**
- **Position CS „undercover“**
- **Recruiting (Open to Teamwork)**
- **No Informatics Group in other Department**
- **Many Joint Programs**

CS has minors, Information Science with Faculty of Economics, Computer Engineering with EE department, Media Science with Media Design department,...
- **Many Joint Research Projects**

(sometimes problematic: publications of interdisciplinary research)
- **Continuous Participation in University Leadership**