Work and Engineering Psychology Group at TU Darmstadt  
(FAI Forschungsgruppe Arbeits- und Ingenieurpsychologie, J. Vogt)

Our philosophy

Human behavior, cognition, and emotion in all its diversity is our concern. We investigate, model, predict, and improve the interaction of humans in technological and organizational environments. We optimize the mutual learning and interacting of humans with technology and organization.

Safety, efficiency, and health are the preconditions of successful products, production, and service processes. Work should make sense and fun, respect natural resources and environments. This requires:

- Ergonomic work design
- Recruiting the right people and facilitating them into the new job roles
- Continuous training of the work force
- Leadership and team development
- Innovation in technology, products, services, and work processes
- Resilience engineering

Our values

Integrity is our highest value. We act according to ethical principles of science and research. Our projects contribute to health, safety, natural resource and environment protection.

Our strengths

We develop intervention, prevention, innovation, and evaluation in interdisciplinary cooperation. Previous scientists were expected to know everything about a very tiny specialist area. The global challenges of today require integrating the knowledge of many specialist areas and thus teambuilding specialists and generalists in interdisciplinary research and development teams.

Our society needs to become interdisciplinary. University graduates must be trained in multiple methods and interdisciplinary project work from the first year on.

Our society needs integration of psychological care. The dramatic increase of psychological problems at work requires concepts of stress management and psychological growth in crisis. Stress, strain, burnout, critical incidents at work etc. demand integrated care. Instead of ignoring psychological challenges and pushing them to private life, employers must offer psychological services at work. The demographic change and lack of qualified experts will lead to workforce migration towards the best employers. FAI combines clinical psychology with work and organizational psychology to meet this challenge.

Our society needs user- and environmental-friendly products. We investigate and design intuitive interaction of humans with machines. Doing so, sustainable resource and energy management is an important issue.

Companies and other organizations need strategic human resource management. The old way of trying and reducing staff will not work in the times of demographic change. Planning, controlling, developing, and sustaining personnel deserve strategic attention and instruments like Balanced Scorecards are helpful to manage soft factors like health and safety.

Our society needs sustainable production and service processes. Customers increasingly consider environmental issues in their decisions. Raw material, energy, water, and
disposal fees for waste are becoming more expensive. Sustainable production and service provision becomes a strategic competition advantage.

Employees want Work-Life-Balance. The ‘War for Talents’ favors employers with solutions for stress, strain, and work privacy conflicts.

**Strategy**

Strategy is the direction and scope of an organization over long term, which ideally matches its resources to its changing environment, and in particular its markets, customers or clients so as to meet stakeholder expectations (Johnson, J.V. & & Scholes, K. 1997, Exploring Corporate Strategy: Texts and Cases. Hemstead: Prentice Hall).

**Our Direction:** development for sustainability

**Our scope:** multilevel (individual, organization, society)

**Individual level**

Ergonomic work design, for example, warning signals in general aviation or water supply plants

Applying work, organization, and business psychology in clinical settings, for example, burnout, mindfulness, repetitive strain injury (e.g. mouse arms), stress and strain in general;

Designing products and services for safe, healthy, user- and environment friendly operation, for example, ecological and intuitive product design, usability, joy of use, urban health games, eye and emotion tracking, privacy and usable IT security

Prosthetics; the European Innovation Partnership on Active and Healthy Ageing (EIP AHA) identified this as innovation field A2 ‘Falls Prevention’

http://www.prothetik.tu-darmstadt.de/forschungsprojekte_prothetik/index_53.en.jsp

**Organizational level**

Managing critical incidents at work, e.g. in aviation and hospitals

http://www.sciencedirect.com/science/journal/aip/00014575

Developing leadership, for example, with respect to employee health in restructuring

Planning, developing, controlling, and sustaining human resources, e.g. balanced scorecard health

**Societal level**

Optimizing physical living environments, resource and energy consumption, for example, recycling behavior and noise protection

Developing interdisciplinary project work, for example, www.kiva.tu-darmstadt.de

Integrating psychological care, for example, managing absenteeism, presenteeism, psychological care at work and in social life; EIP AHA innovation field B3 ‘Integrated Care’

Smart homes and communities for EIP AHA innovation fields D4 ‘Age Friendly Environments’ and C2 ‘Independent Living Solutions’
Resources:
FAI currently consists of 11 scientists and 15 student research assistants. Three half-time faculty positions provide support processes for the whole group:

- Curriculum development
- Industrial project acquisition
- Laboratory services, especially psychophysiological monitoring, saliva analysis, eye and emotion tracking
- Financial controlling of all projects

Our stakeholders
Students, who want high-quality teaching in applied contexts and in project formats,
Mechanical engineers, who need human factors considerations,
Computer and information engineers, having human computer interaction and security/robotic/prosthetics/human body sensor issues,
Building engineers and architects, who develop urban and rural areas as well as smart homes,
Environmental engineers in areas like regenerative energy, recycling, water management, environmental awareness, and pro-environmental behavior,
Economists and managers working in organizational development and human resource facilitation.

Strategy, Process, Structure
The sequence of sustainable organizational development should be strategy first. Then we design the processes and structures to best support this strategy.