## Challenging Scenarios of today (1)

### Smart Home / Ambient Assisted Living (AAL)

<table>
<thead>
<tr>
<th>Intradisciplinary Topics</th>
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<th>Transdisciplinary Topics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Human-computer interaction</td>
<td>Psychology</td>
<td>Health Insurance</td>
</tr>
<tr>
<td>Cyber-Physical System</td>
<td>Sociology</td>
<td>Retail</td>
</tr>
<tr>
<td>(Domain-specific) Languages</td>
<td>Medicine</td>
<td>Banking</td>
</tr>
<tr>
<td>End-user Programming</td>
<td>Geriatrics</td>
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<tr>
<td>(Big) Data Analytics</td>
<td>Mechanical Engineering</td>
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<tr>
<td>Visualization</td>
<td>Architecture</td>
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<td>Privacy</td>
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<tr>
<td>Software Engineering</td>
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</tbody>
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Challenging Scenarios of today (2)

Work 4.0 / Cognitive Assistance Systems

**Intradisciplinary Topics**
- Human-computer interaction
- Cyber-Physical System
- Robotics
- (Domain-specific) Languages
- End-user Programming
- AR/VR
- (Big) Data Analytics / Visualization
- Privacy
- Software Engineering

**Interdisciplinary Topics**
- Psychology
- Sociology
- Economics
- Medicine
- Mechanical Engineering
- Architecture

**Transdisciplinary Topics**
- Unions
- Health Insurance

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Cognitive Assistance System

**System Aspect**
- easy to use
- adaptive
- flexible
- reliable
- compliant
  - privacy
  - legal

**Worker Aspect**
- healthy
- tired
- stressed
- skilled
- qualified
- competent
- experienced

How to bridge this gap?

Life, as we see and construct it

We need intra-, inter- and transdisciplinary research!

Life, as it is
Types of Research

- **intra-disciplinary:** research (methods) within a discipline
- **multi-disciplinary:** parallel, independent research of several disciplines
- **inter-disciplinary:** joint / combined research (methods) of several disciplines
- **trans-disciplinary:** transfer of research (methods / results) between disciplines (affected stakeholders)
Graduate School

Design of Flexible Work Environments – Work 4.0

Intra-, inter- and transdisciplinary approach
Graduate School
Design of Flexible Work Environments – Work 4.0

Intra-, inter- and transdisciplinary approach

Heterogeneity of disciplines
• Research methods
  • constructive vs. empirical
• Analysis vs. synthesis
• Top-down vs. bottom-up
• Ontologies
• Publication types
• Referencing
Intra-, inter- and transdisciplinary approach

How to be successful - some (personal) insights

• Select colleagues and PhD students who are
  • interested in crossing boundaries
  • convinced that this is needed
  • willing to speak to researchers of other disciplines
  • willing to invest additional effort
• Take care of supporting means
  • joint glossary / ontology
  • inter- and transdisciplinary PhD supervision
  • frequent joint meetings / discussions / presentations
• Identify and work on common research topics
digital twin of a human

networks of digital twins of humans
Intra-, inter- and transdisciplinary approach

**Be aware of numerous obstacles**

- additional effort
- disciplinary PhD regulations (within a faculty)
- different salaries – depending on discipline
- disciplinary rankings / metrics
- missing inter-/transdisciplinary publication means
- missing appreciation of inter-/transdisciplinary research
Intra-, inter- and transdisciplinary approach

Discussion

What are your experiences?

What are your advices?
The Wide Role of Informatics at Universities

Chair: Susan Eisenbach