

Human Factors and International Cooperation in Ergonomics

Harald Kviecien, KOHS



@ 37. ERGONÓMIAI NYÁRI EGYETEM, 2026



Conference Endorsed by the

IEA
International Ergonomics &
Human Factors Association



Endorsed by

FEES
Federation of European Ergonomist Societies



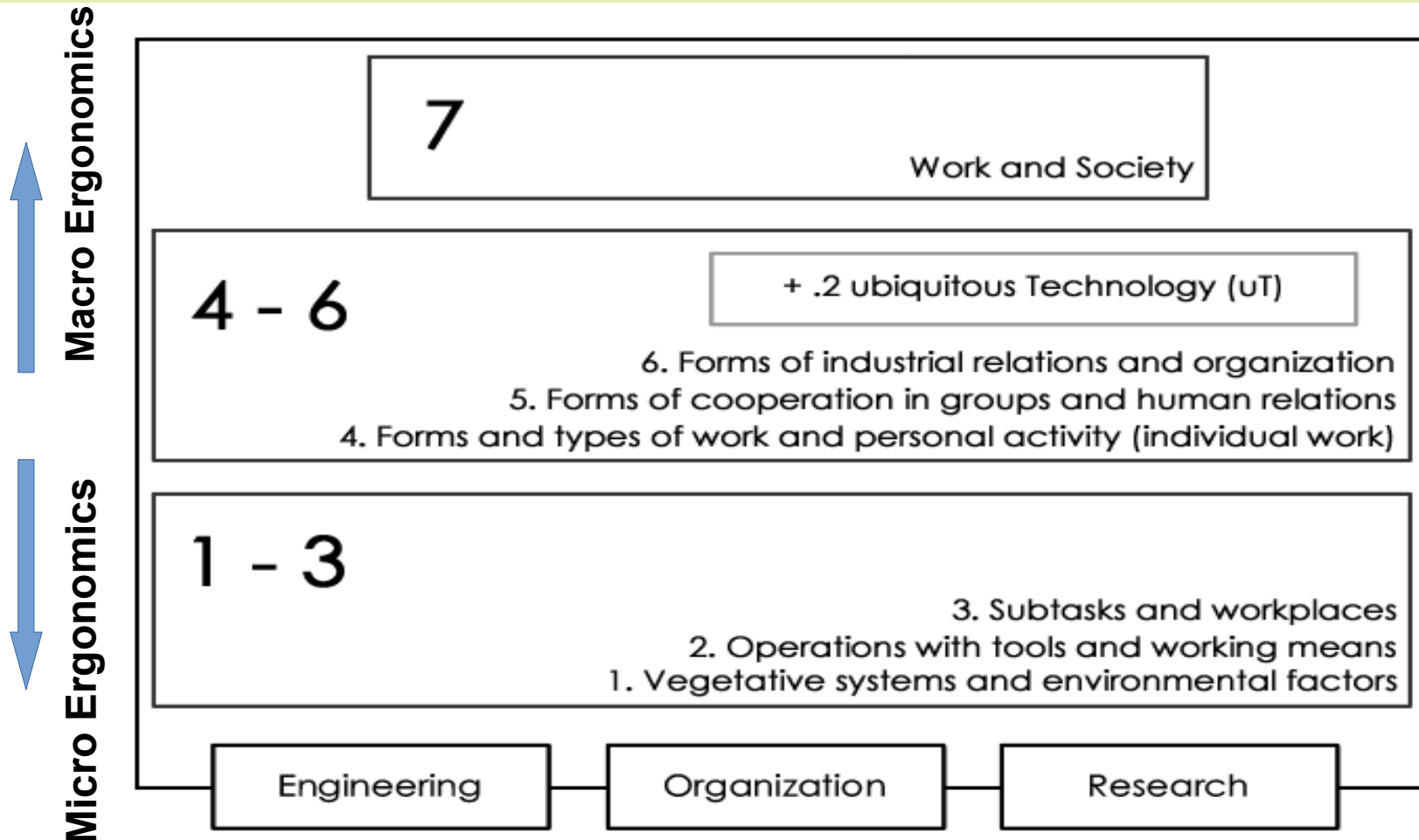
Human Factors and International Cooperation in Ergonomics

Overview / KOHS activities

- **3 areas of activity**
- Education in ergonomics – ergonomics in education
- Socio-technical system design (STS-D) & onotologies
- WAPO_f() / noHTA
- New roles
- International cooperation // R&D // CoX

Ergonomic Layer model HK7+1

Bridging **Engineering**, **Organization** and **Research**



Ergonomic Layer HK7+1_essential (modified from Luczak 1987), (Kviecien 2024)

KOHS

<<< towards human centered AI >>>
<<< → Industry/Society 5.0 >>>



KOHS is an independent organisation, performing research in the field of occupational safety and health and ergonomics since 1997. KOHS offers solutions for promoting safety and health at work.

***PIMEX** is an internationally highly recognised and powerful method.*

*The **kohs.PIMEX.system** is used worldwide by leading institutions to improve health of working people.*



KOHS – Working areas

Technology → Ergonomics → OH → health care → active life



agile development of ICT functionality	new methods to control processes (risk management, OD, working system design, ...)	identify, design and implement new processes & models
eLearning	methods for competence development	capacity building in different settings
		

Introduction

about

Harald Kviecien: researcher @ KOHS – technology/AI, human factors/ergonomics, integrated learning (> 25 years)

Active Memberships:

ÖAE (Austrian Ergonomics Association)

IEA (International Ergonomics Association) TC Safety & Health

GfA (German Ergonomics Association)

+ ISO standardisation

KOHS

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Context

Coping with Transitions in Health Care (as one of the subject sectors)

- The European social systems face several **transitions** causing a **higher demand** to cope with them for **health care organizations**
- **Transitions:**
 - 1 The core processes of health care
 - 2 “New” approaches of care (i.e. community health care, primary health care)
 - 3 Occupational health management (→ towards prospective)
 - 4 The (increasing) **use** of technology (or even the **involvement** in processes of agile development)

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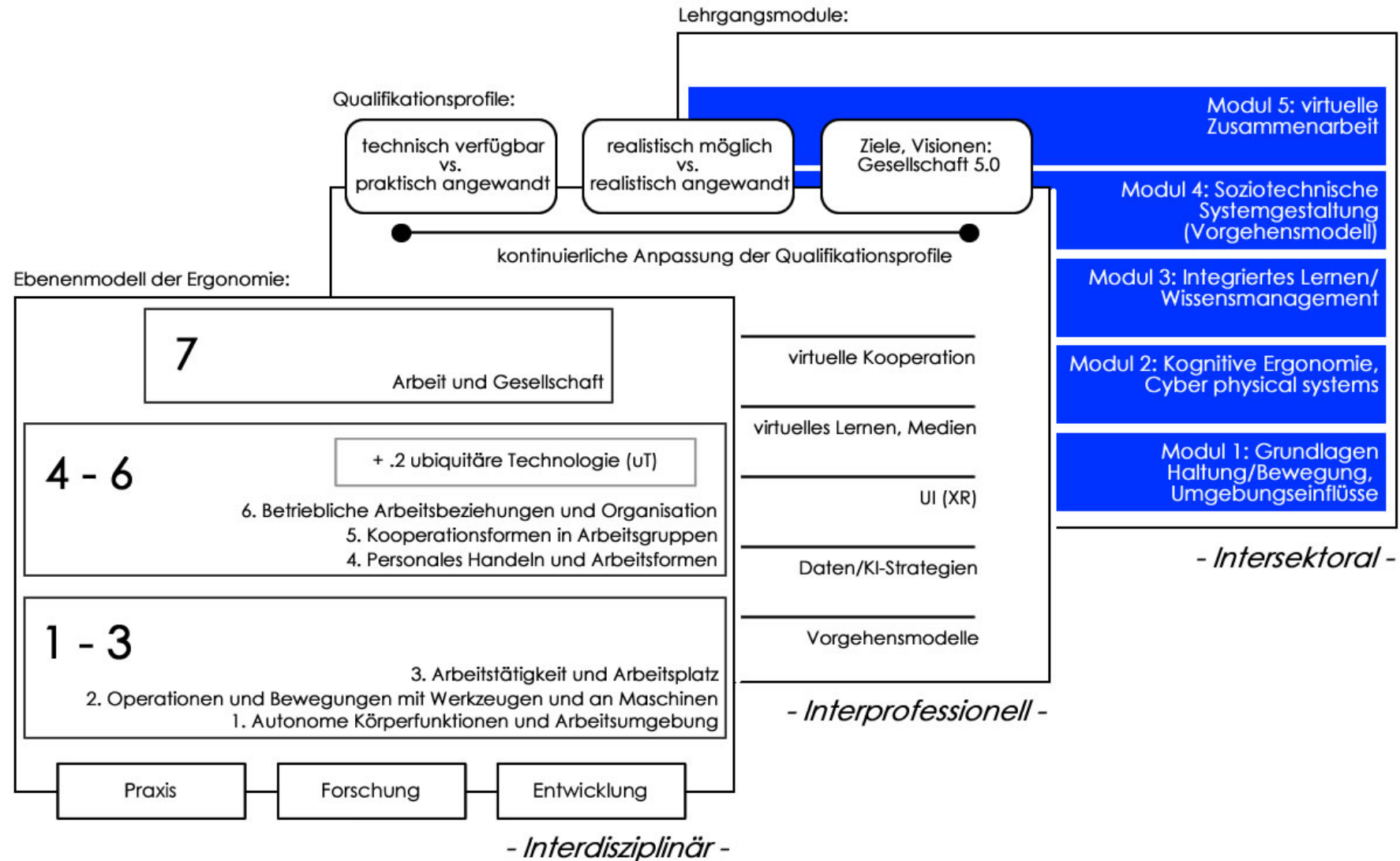
new education in Austria (Project DigiErgo (2026-2028) activities

Project:

Implementation of a new educational program:

- funded by FFG (Austrian Research Promotion Agency)
- Partners: BOKU (life science university) AIT (Austrian Institute Of Technology), SVS (social assurance), AUVA, KOHS, etc.
- Micro Degree
- Closing the gap between: professional education → advanced vocational education → academic education
- DigiErgo = ~ digital ergonomics

Project DigiErgo: structure, profiles, modules



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h_ definition of: Cybernetics

[definitions]

Definition of: cybernetics

~ „the study of circular causal and feedback mechanisms in biological and social systems“ (Heinz v. Foerster et. al. / Macy conferences)

In our context: Technology Enabling Socio-Technical System-Design (STS-D)

The 2 meanings:

- Meaning 1: ($\leftarrow$) STS-D enabling Technology (engineering of technics, but also engineering science)
- Meaning 2: ($\rightarrow$) Technology enabling STS-D

„Wiener“ approach of STS-D

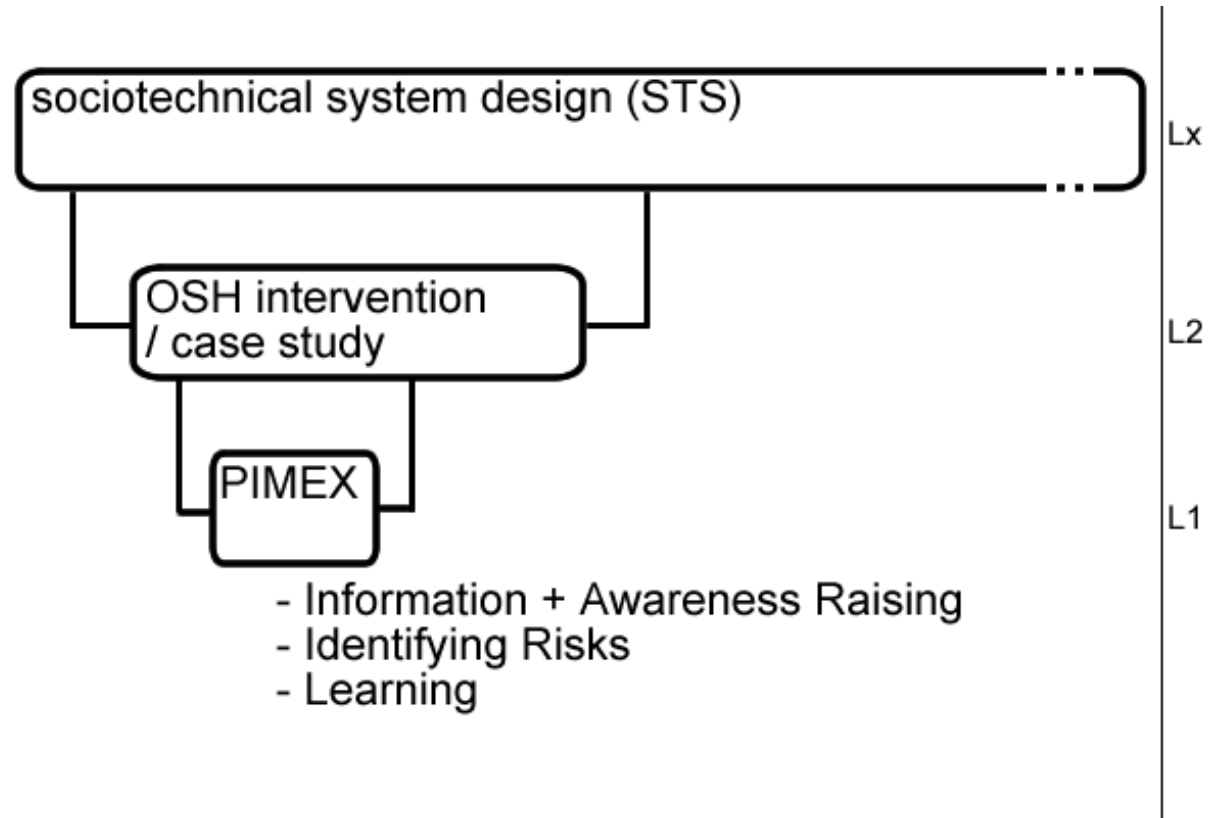
Development

- Developed since 1997 (in cooperation with OH institutions)
 - Origins of STS-D in 1960s
- Started with the „PIMEX method“ (visualisation), thus high relevance of:
 - → **participatory ergonomics**
 - → technology / agile development / (measurement) data (structures)
 - → **intervention process**
- Publications so far with focus on PIMEX, OH cases, intervention
 - publication on the whole „Wiener“ approach:

Wichtl, M., Winker, N., Kviecien, H., 2025: **Umriss des Wiener Ansatzes zur Soziotechnischen Systemgestaltung**, In: GfA, Sankt Augustin (Hrsg.). Arbeit 5.0: Menschenzentrierte Innovationen für die Zukunft der Arbeit, Frühjahrskongress 2025, Aachen

Socio-technical system design (STS-D)

“Wiener approach”



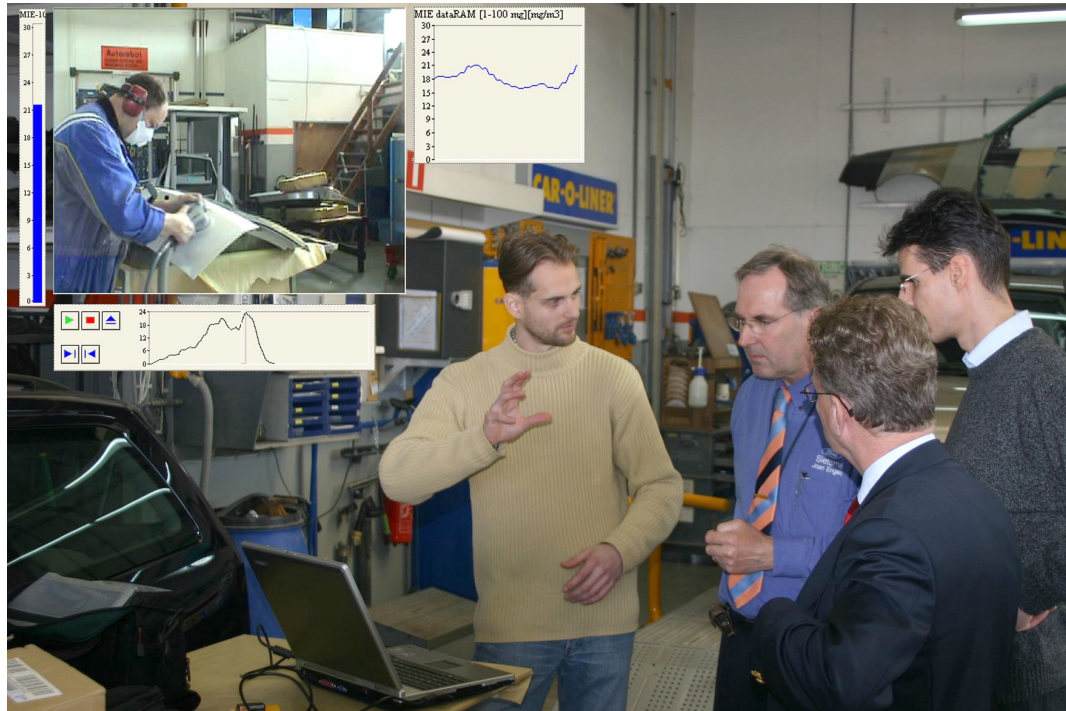
Key characteristics of STS-D

In context to approach [iL+STS]

- Division in subsystems (the classical working systems) and their interrelations
- Normative procedure (pursue productivity and health promoting work at the same time)
- Central subject of design: **the work task**
- The employees themselves become co-designer of the working systems (requires additional competences)
 - = demand to initiate & control **learning process** → **[iL+STS-D]**
(iL = integrated learning)

PIMEX based learning at the job

**Safety and health as learning process –
promoting learning outcomes**



**PIMEX is a medium for learning and knowledge – on the job as well
as in virtual learning spaces**

Heat stress, thermic comfort

Investigation in: Laundry

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RD Project:
P2024_Thermal_E

Sensors:

- Temperature (ambient)
- Globe temp.
- Dry bulb temp.
- Wet bulb temp.
- Humidity

Globe Temperatur[°C]

25,56

Temperatur[°C]

24,96

Dry Bulb Temperatur[°C]

24,6

Feuchte[%]

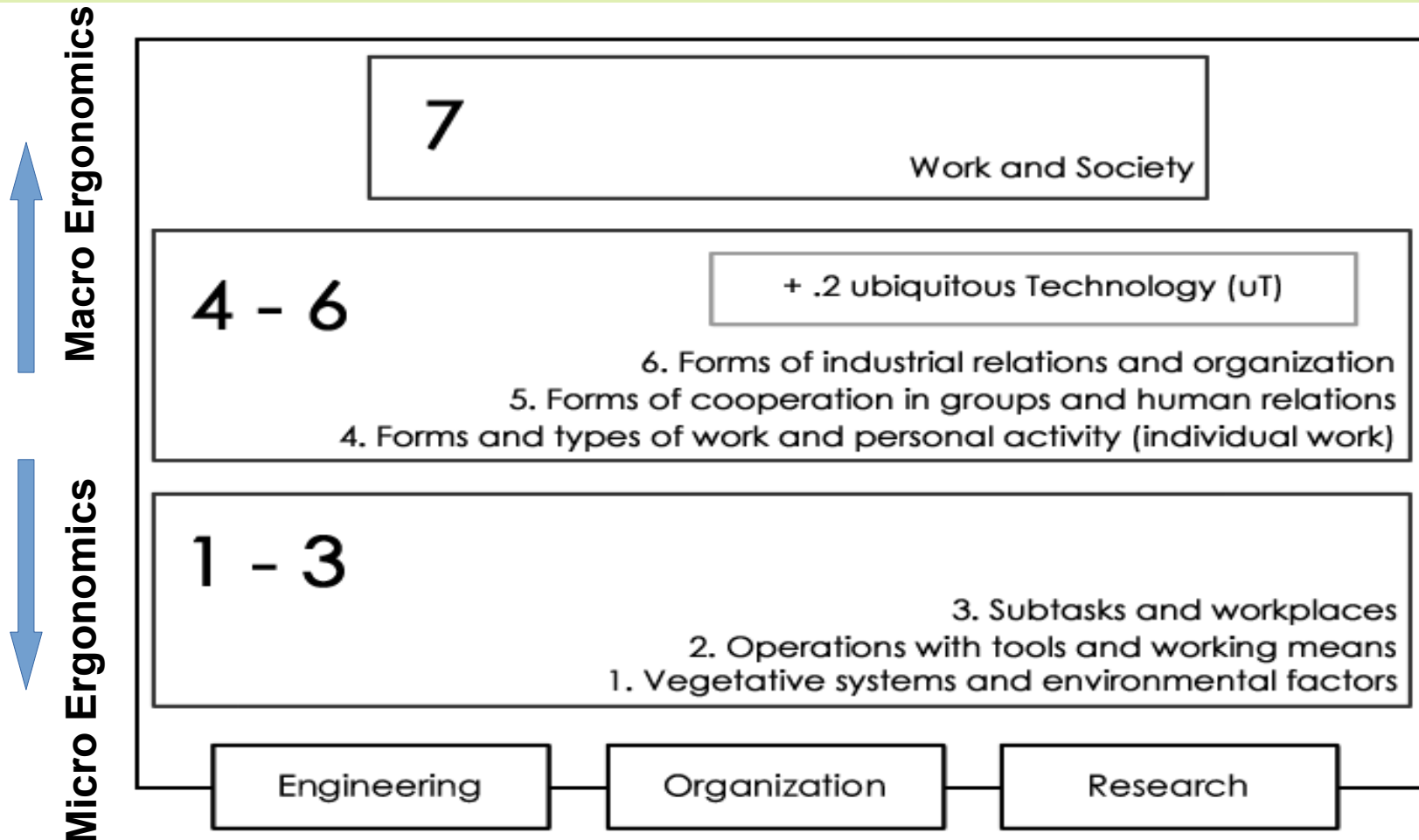
33,2

Wet Bulb Temperatur[°C]

18,04

Ergonomic Layer model HK7+1

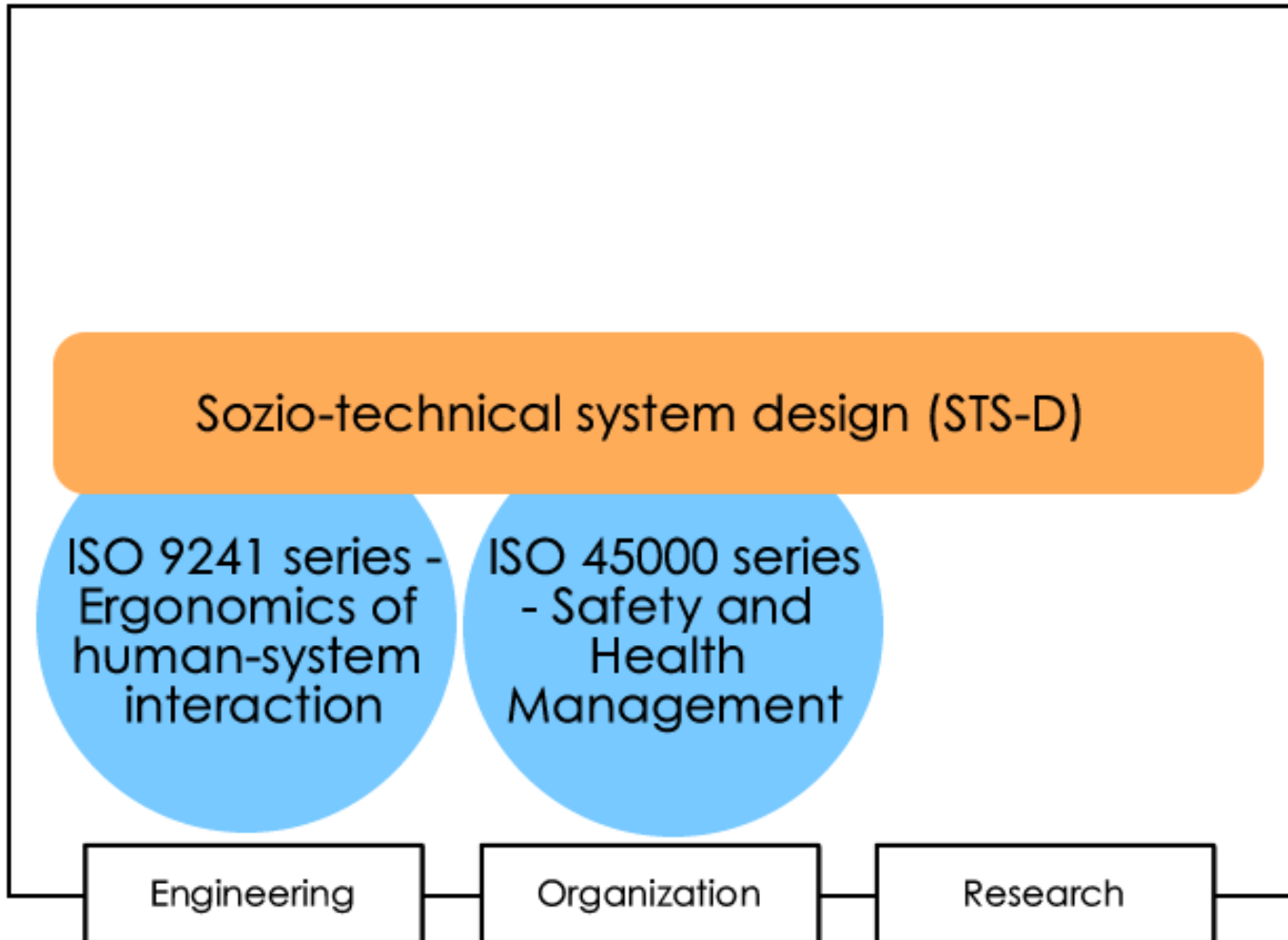
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Organisation/Management ↔ Engineering

Needed: interprofessional cooperation!



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WAPO_f() / noHTA functional analysis & HTA

- WAPO_f(): Work activities / Operations / processes (and functions) to:
 - Observe tasks, activities (for task analysis (TA, HTA) → mainly **levels 1-3 → 4-6**
 - Model STS (functional analysis of (sociotechnical systems) mainly **levels 4-6 → 7**

Apply HTA

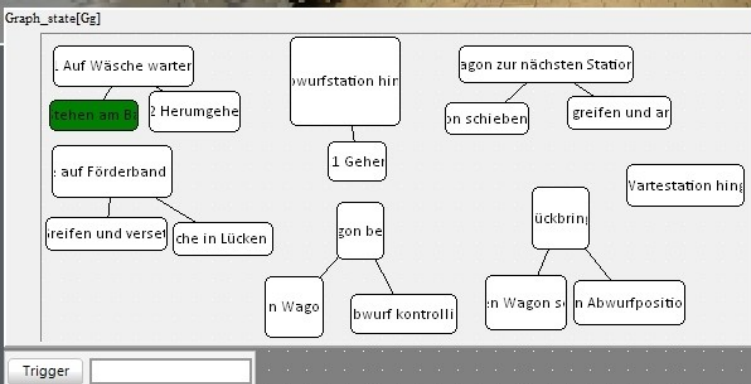
@ Investigation in: Laundry

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+ RD Project:
P2023_STS-D, P2024_HPose_Core

Define
Operations.

→ build WAPO
stream
(= graph state
stream)



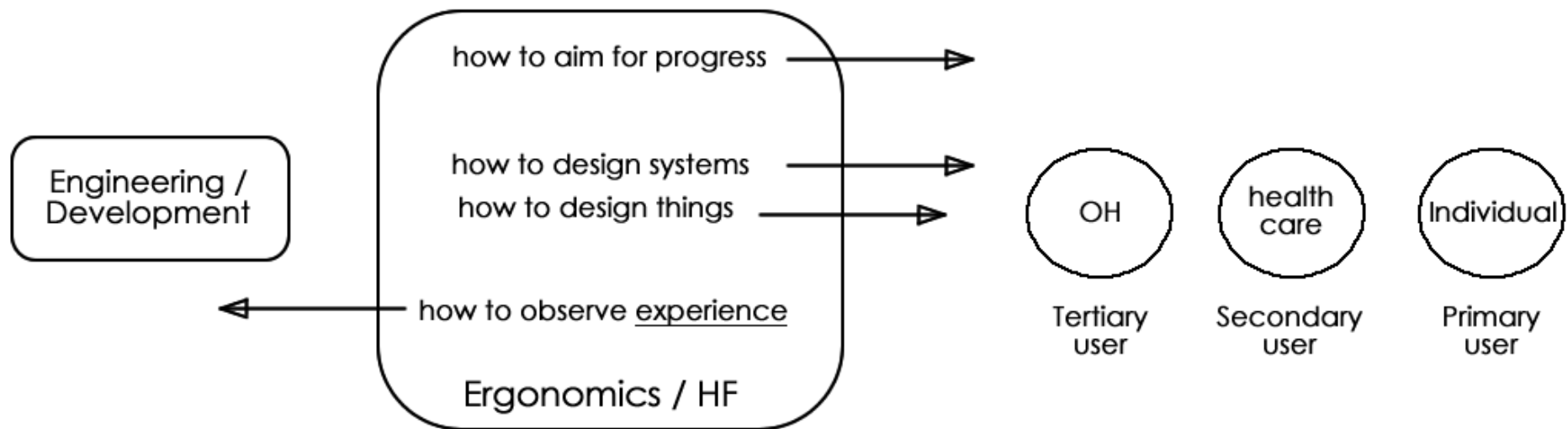
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Approach: Bridging disciplines (Ergonomics as key discipline)



Plus: Regarding User Experience (UX), ergonomics helps understanding: the Context of Use

(new ISO standard on Context of Use in preparation)

Approach: Bridging disciplines (Ergonomics as key discipline)

h_: Some areas need special attention (at the moment)
(= research demand !!!!!):

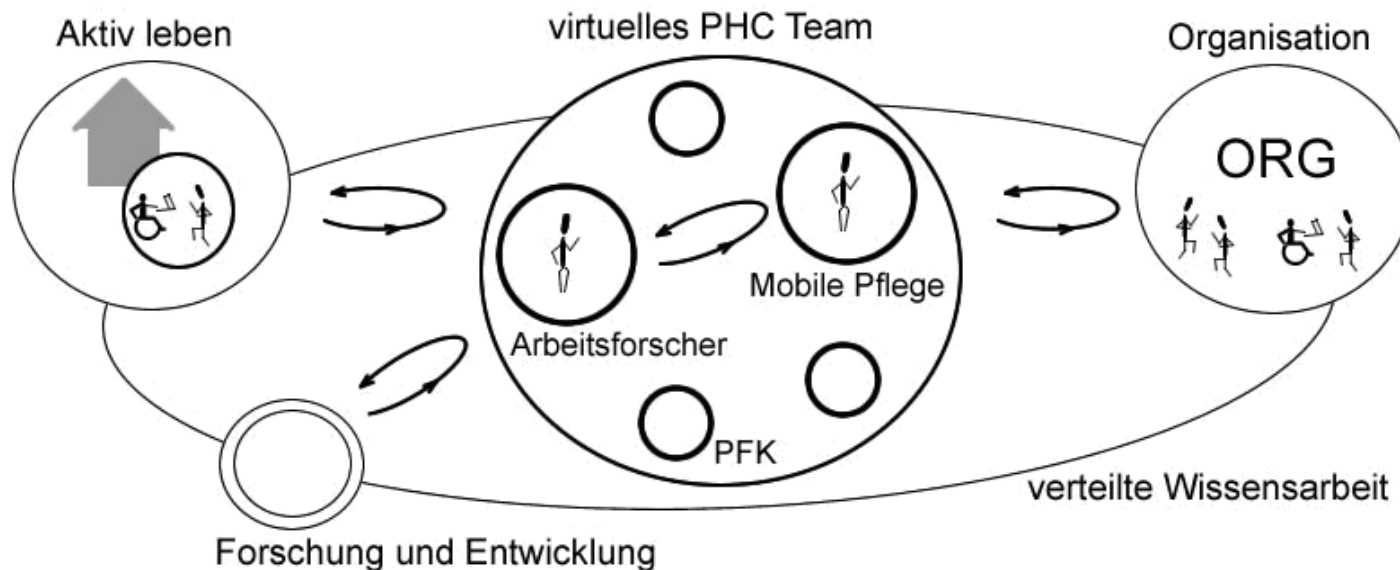
h_: Engineering ← Ergonomics/HF

h_: Ergonomics → OH (Occupational safety and health institution)

h_: health care → Individual

Integrated work science (vision)

New role for ergonomics



Publication: Kviecien H, (2019) **Integrierte Arbeitsforschung in der agilen Entwicklung neuer Technologien zur verteilten Wissensarbeit im Arbeits- und Gesundheitsschutz**, In: GfA, Sankt Augustin (Hrsg.)

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International cooperation

(Ergonomics as key discipline for industry / society 5.0)

- Conferences
- Projects on: **Education** in ergonomics – ergonomics in education → Erasmus+
- Funded international **Research & Development** projects
- IEA TC Safety & Health
- CoX

IEA TC Safety & Health

International cooperation

- 3 work groups

**WG1: Ergonomic
risk factors
/ structures**

WG2: Educational

**WG3:
Standardization
Ergonomics ↔ OSH**

CoX - activities

events:

“8. Wiener Ergonomie Forum” / international conference on human centred design of (interactive and safe) systems:

17. - 18 November 2026, Vienna

call for contributions!

organised by ÖAE, UAS Technikum Wien, BOKU University, IEA TC Safety and Health, supported by FEES, KOHS, AUVA, UXPA Austria and others.

Info: <https://kohs.at/cms/en/2026/05/28/8-wiener-ergonomie-forum-international-conference-on-human-centred-design-of-interactive-systems/>



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