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## THE ESSENTIAL CONTRIBUTION OF HUMAN FACTORS/ERGONOMICS TO THE FUTURE OF WORK WE WANT

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Human Factors/Ergonomics (HFE) contributes to effective and sustainable work systems through a unique combination of three substantive drivers of intervention: (1) it takes a systems approach; (2) it is design-driven; and (3) it focuses on optimizing two closely related outcomes, performance and well-being. HFE can be described as a multi-disciplinary, user-centric 'bundling science,' in that it applies theory, principles, and data from many relevant disciplines to the design of work systems, taking into account the complex interactions between the human and other humans, the environment, tools and equipment, and technology to enhance human performance and well-being in the world of work (Wilson, 2000). Multiple HFE methodologies are available for the creation and evaluation of effective work systems, addressing not only their physical demands and constraints but also the sociotechnical attributes of the organization comprised of its personnel, technological, and operational characteristics (Hendrick, 2008). The philosophical foundation of HFE is congruent with that of the ILO, as practitioners recognize the need for participation of all stakeholder groups (i.e., participatory ergonomics) in system design. Effective HFE is indispensable to support our life and work in the 21st century; without attention to HFE in design, work systems will not be human-centered, and will not support the sustainability of workers, organizations, or societies.

### **Challenges – Threats to effective HFE for safety and occupational health in the future of work**

**The world of work today comprises a wider disparity in work situations than ever before, resulting from the simultaneous processes of globalization of economies and new information and communication technologies affecting countries and their societies.**

*Multiple types of work arrangements* present new opportunities for enterprises – but also interfere with the management and regulation of HFE issues at the organizational level. Internet-based businesses flourish, allowing the development of new types of enterprises operating in the web without being legally constituted in any country. New labour practices and forms of contracting have enabled the proliferation of an informal or 'gig' economy, and in combination with disruptive technologies such as app-based work or crowdsourcing (Zink, 2019), has fostered the development of a new and endangered worker class that is growing worldwide: the precariat (Standing, 2011). Members of the precariat class generally earn little money and have no job certainty, and no protections or HFE provisions for safety and well-being. These phenomena are affecting millions of workers in many countries and specifically industrially developing countries (IDCs), which are less resilient to the impact of new global and economic dangers. IDC weaknesses in the capacity to react to different observed changes in work practices (low resilience) can be observed, for example, in the lack of updated national employment laws and regulations able to deal and control new working practices, platform economies, or dangerous use of new chemicals and nano-substances. A weak union culture and the resistance of employing organizations and, sometimes, of their governments, make it even more difficult for workers of the precariat to organize themselves to defend their rights to safe and healthy work conditions. Moreover, these phenomena impact organizations, affecting enterprise sustainability and, by extension, damaging social contracts between labour partners.

*Technological advances* such as new information and communication technology, robotics, artificial intelligence, and digitalization also pose new major challenges to effective HFE in the world of work. Human tasks are being increasingly auto-

mated or robotized; production is digitized and work is accomplished through digital platforms. Humans are teaming with robots or automation rather than other humans. Jobs are being profoundly transformed, often with little attention to the impact of changed job requirements on stress, workload, and worker sustainability – all of which are HFE concerns.

Because of the wide range of new work situations, ILO Codes of Practice and OSH standards and guidelines must address HFE issues that range from physiological threats such as musculoskeletal disorders or injuries from physical work, especially in IDCs, to cognitive and psychological threats stemming from new information technology, robotics, artificial intelligence, and digitalization. Moreover, the impact and rhythm of the introduction of these global phenomena are different for countries and world regions and their labour practices.

## **Responding to the challenges – collaboration between IEA and ILO for the Future of Work We Want**

**The ILO Centennial Anniversary – which is also the 60th Anniversary of IEA - offers a singular opportunity for tackling these challenges and launching projects to create sustainable work systems.**

ILO has systematically developed relevant OSH standards, innovative guidelines (i.e., ILO-OSH 2001 on Management Systems) and many practical Codes of Practice to improve quality of working life and labour practices for protecting workers, as well as work organization processes to ensure enterprises' sustainability and productivity. In parallel, the International Organization for Standards (ISO) created HFE standards for human-centered organizations (ISO 27500, 27501). However, new work practices such as those described above impact job profiles and definitions; the ILO and IEA need to work collaboratively to conceive and create new socio-technical approaches for the world of work and apply them through innovative projects and efficient programs that achieve concrete results as soon as possible – especially in IDCs. The “human-centred agenda” recently outlined by the ILO Global Commission on the Future of

Work (2019) highlights HFE issues such as the requirement for safe and healthy work conditions and the need to harness and manage technology to ensure that the human is always in command. These challenges must be met in order to ensure sustainable work systems.

We propose a collaborative effort between ILO and IEA to engage stakeholders and to design and implement sustainable work systems for the Future of Work We Want. This collaborative approach would involve not only the traditional ILO tripartite alliances of governments, employers and workers organizations, but also universities, international and/or national HFE societies that have an institutional mission and professional mandate linked to decent work, the quality of working life, OSH, organizational justice, and the social dialogue approach. IEA can offer its specialized Technical Committees, Federated Societies (52 member societies in North America, Latin America, Europe, Asia, India, and Oceania), institutional regional networks in Europe, Asia, and Latin America, and individual experts and practitioners worldwide including IDCs. IEA members are willing to be involved in alliances and projects and to actively collaborate on ILO initiatives. IEA can also help ILO to establish fluid contacts with universities teaching HFE in IDCs.

Potential joint initiatives and activities include:

- 1) establish new ILO web links with institutional HFE sites
- 2) give lectures in postgraduate HFE courses in IDCs or participate in open discussions with researchers, professors and students on ILO and OSH key current issues
- 3) accept invitations to participate in university HFE research activities, including studies on sustainable work systems
- 4) invite HFE specialists to identify local needs related to the world of work and design joint ILO-IEA projects with ergonomics components, including participatory ergonomics approaches for organizations using digital platforms and other new forms of work.

- 5) encourage and support the founding of HFE observatories for monitoring changes and innovations in the working world – and for advertising success stories where effective HFE has had a positive impact
- 6) conduct workshops to engage stakeholders and identify projects, using methods such as the tool developed by IEA. The tool uses a stepwise approach to demonstrate the value proposition of HFE and to specify and develop HFE initiatives (IEA Executive Committee, 2018).
- 7) organize new international conferences on HFE, similar to the renowned joint ILO/IEA International Symposium on Ergonomics in Developing Countries, Jakarta, November 1985.

Clearly, ILO and IEA have many shared values, approaches and goals that lend themselves to collaborative possibilities. The role of the ILO as set forth in the ILO Global Commission report is unique and indispensable for the success of these and other collaborative proposals. Attention to the HFE perspective through these types of joint initiatives will create more opportunities for decent work, better quality of working life, effective OSH practices, proactive organizational justice, and improved social dialogue – and thus will enhance the sustainability of work systems and help to achieve the future of work we all want.

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