



IMIA Human Factors Engineering for Healthcare Informatics WG 2023 Report (June 2022 – June 2023)

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[WG Website](#)

Achievements – IMIA WG Events and projects conducted, and publications completed

- A. Members of the working group published together a paper in the IMIA Yearbook 2022: Peute LW, Wildenbos GA, Engelsma T, Lesselroth BJ, Lichtner V, Monkman H, Neal D, Van Velsen L, Jaspers MW, Marcilly R. Overcoming Challenges to Inclusive User-based Testing of Health Information Technology with Vulnerable Older Adults: Recommendations from a Human Factors Engineering Expert Inquiry. Yearb Med Inform. 2022 Aug;31(1):74-81. doi: 10.1055/s-0042-1742499. Epub 2022 Jun 2. PMID: 35654432; PMCID: PMC9719783.
- B. The WG contributed jointly with the “Organizational Issues” WG and the “Evaluation” WG to a position paper in the IMIA Yearbook 2023: “One Health: Insights from Organizational & Social, Technology Assessment and Human Factors Perspectives” (Philip Scott, Craig Kuziemsky, Xinxin Zhu, Christian Nøhr, Elske Ammenwerth, Polina Kukhareva, Linda Peute, Romarc Marcilly)
- C. The WG contributed to a funding application for a Dutch feasibility study on involving hard-to-reach people in User Experience research with digital health innovations. The application was approved and will be performed in september-december 2023. Hereafter the results of study will be forwarded on an international level for international funding.
- D. The WG accepted to take part in a H2020 project that aims at developing a personal health record to support migrant women and refugees and their partners to obtain adequate access to maternity care. We are currently investigating which Academic eHealth Labs associated with the WG could contribute to this project.
- E. Members of the group published collaboratively or individually numbers of paper. Some instances:

- Baysari MT, Dort BAV, Zheng WY, Li L, Hilmer S, Westbrook J, Day R. Prescribers' reported acceptance and use of drug-drug interaction alerts: An Australian survey. *Health Informatics J*. 2022 Apr-Jun;28(2):14604582221100678. doi: 10.1177/14604582221100678. PMID: 35531625.
- Monkman H, Mir S, Borycki EM, Courtney KL, Bond J, Kushniruk AW. Updating professional competencies in health informatics: A scoping review and consultation with subject matter experts. *Int J Med Inform*. 2023 Feb;170:104969. doi: 10.1016/j.ijmedinf.2022.104969. Epub 2022 Dec 20. PMID: 36572000.
- Hägglund M, Scandurra I. Usability of the Swedish Accessible Electronic Health Record: Qualitative Survey Study. *JMIR Hum Factors*. 2022 Jun 23;9(2):e37192. doi: 10.2196/37192. PMID: 35737444; PMCID: PMC9264119.
- Kuziemsky C, Liaw ST, Leston M, Pearce C, Jonnagaddala J, de Lusignan S. Towards Equitable and Resilient Digital Primary Care Systems: An International Comparison and Insight for Moving Forward. *Yearb Med Inform*. 2022 Aug;31(1):47-59. doi: 10.1055/s-0042-1742502. Epub 2022 Jun 2. PMID: 35654430; PMCID: PMC9719759.
- Neal D, Engelsma T, Tan J, Craven MP, Marcilly R, Peute L, Denning T, Jaspers M, Dröes RM. Limitations of the new ISO standard for health and wellness apps. *Lancet Digit Health*. 2022 Feb;4(2):e80-e82. doi: 10.1016/S2589-7500(21)00273-9. PMID: 35090677.
- Grimes TC. Is it time for greater patient involvement to enhance transitional medication safety? *BMJ Qual Saf*. 2022 Apr;31(4):247-250. doi: 10.1136/bmjqs-2021-014116. Epub 2021 Aug 20. PMID: 34417334.
- Douze L, Pelayo S, Messaadi N, Grosjean J, Kerdelhué G, Marcilly R. Designing Formulae for Ranking Search Results: Mixed Methods Evaluation Study. *JMIR Hum Factors*. 2022 Mar 25;9(1):e30258. doi: 10.2196/30258. PMID: 35333180; PMCID: PMC8994140.
- Knudsen C, Villumsen S, Krejberg L, Nøhr C. The Last Mile Problem and Beyond in HIT - The Role of Context-Sensitive Digital Integrators. *Stud Health Technol Inform*. 2022 Aug 31;298:97-101. doi: 10.3233/SHTI220915. PMID: 36073464.
- Monkman H, MacDonald L, Nøhr C, Tanaka JW, Lesselroth BJ. Hidden in Plain Sight: Overlooked Results and Other Errors in Evaluating Online Laboratory Results. *Stud Health Technol Inform*. 2022 Jun 6;290:867-871. doi: 10.3233/SHTI220203. PMID: 35673142.
- Lesselroth B, Church VL, Adams K, Mixon A, Richmond-Aylor A, Glasscock N, Wiedrick J. Interprofessional survey on medication reconciliation activities in the US Department of Veterans' Affairs: development and validation of an Implementation Readiness Questionnaire. *BMJ Open Qual*. 2022 Oct;11(4):e001750. doi: 10.1136/bmjopen-2021-001750. PMID: 36229073; PMCID: PMC9562315.
- Lichtner V. Medications that are unaccounted for in hospitals: discrepancies in electronic records. *Med J Aust*. 2022 Mar 21;216(5):238-239. doi: 10.5694/mja2.51432. Epub 2022 Feb 19. PMID: 35184290.
- Senillosa MB, Saimovici J, Mandirola Brioux HF, Rabinovich D, Galván C, Jauregui OI, Rizzato Lede DA, Otero CM, Luna DR. Mobile Application for Home Healthcare: Physician's Expectations and Perceptions. *Stud Health Technol Inform*. 2022 Jun 6;290:197-199. doi: 10.3233/SHTI220060. PMID: 35672999.
- Adelsjö I, Nilsson L, Hellström A, Ekstedt M, Lehnbohm EC. Communication about medication management during patient-physician consultations in primary care: a participant observation study. *BMJ Open*. 2022 Nov 3;12(11):e062148. doi: 10.1136/bmjopen-2022-062148. PMID: 36328391; PMCID: PMC9639081.
- Oberschmidt K, Grünloh C, Nijboer F, van Velsen L. Best Practices and Lessons Learned for Action Research in eHealth Design and Implementation: Literature Review. *J Med Internet Res*. 2022 Jan 28;24(1):e31795. doi: 10.2196/31795. PMID: 35089158; PMCID: PMC8838546.
- Engelsma T, Yurt A, Dröes RM, Jaspers MWM, Peute LW. Expert appraisal and prioritization of barriers to mHealth use for older adults living with Alzheimer's disease and related Dementias: A Delphi study. *Int J Med Inform*. 2022 Oct;166:104845. doi: 10.1016/j.ijmedinf.2022.104845. Epub 2022 Aug 10. PMID: 35973365.

Viitanen J, Tyllinen M, Tynkkynen E, Lääveri T. Usability of information systems: Experiences of outpatient physicians, outpatient nurses, and open care social welfare professionals from three large cross-sectional surveys in Finland. *Int J Med Inform.* 2022 Sep;165:104836. doi: 10.1016/j.ijmedinf.2022.104836. Epub 2022 Jul 25. PMID: 35930926.

Jansen-Kosterink S, Broekhuis M, van Velsen L. Time to act mature-Gearing eHealth evaluations towards technology readiness levels. *Digit Health.* 2022 Jul 11;8:20552076221113396. doi: 10.1177/20552076221113396. PMID: 35847525; PMCID: PMC9280845.

Sijm-Eeken ME, Arkenaar W, Jaspers MW, Peute LW. Medical informatics and climate change: a framework for modeling green healthcare solutions. *J Am Med Inform Assoc.* 2022 Nov 14;29(12):2083-2088. doi: 10.1093/jamia/ocac182. PMID: 36219786; PMCID: PMC9667184.

Describe WG/SIG Participation - Engagement and participation in IMIA, IMIA Region or member health informatics events and activities in the past year

- A. **MedInfo 2023.** The chair and the co-chair supported MedInfo 2023 review process as SPC members in charge of “Track 2: Quality, Safety and Outcomes”
- B. **CSHI 2023 (pre-medinfo conference).** The HFE4HI working group supports the organization of the conference CSHI 2023 which will be held in Sydney and is being led this year by the chair of the IMIA’s “organizational and social issues” working group and the European federation for medical informatics’ (EFMI) “human and organizational factors of medical informatics” working group. Paper reviews were performed by members of the IMIA working group and a university collaboration was set-up where Sydney hosts a student trainee at the University of Amsterdam, department of Medical informatics who will also support preparation of the CSHI conference by the chair of the working group.
- C. **Other conferences.** Members of the group presented their research to several conferences (ex. MIE, HEPS, AMIA) and organized or contributed to panels and workshops at the Medical Informatics Europe 2023 conference. For instance: panels on Understanding System Coordination As An Enabler of One Digital Health and on the use of the SEIPS model (cf. supra), a working group on Design Thinking for Digital Health Solutions: Empowering Medical Informatics Students (Lisbeth van der Berg, Thomas Engelsma, Linda Peute)
- D. The WG initiated a **discussion on green medical informatics:**

At **ICIMTH 2023** : Organizational and Human Factors in Green Medical Informatics – a Case Study in Dutch Hospitals

- a. Training Healthcare Professionals to Mitigate the Climate Challenge – Development of a Lean Six Sigma E-learning (M Sijm-Eeken, L Peute, M Jaspers)
- b. Organizational and Human Factors in Green Medical Informatics – a Case Study in Dutch Hospitals (M Sijm-Eeken, R Marcilly, M Jaspers, L Peute)

At the **HEPS 2023** conference, Delft, by meeting with WG partners.

At the **Zorg & ICT beurs**, Utrecht, Netherlands, meeting with WG partners.

At the **Medical Informatics in Europe 2023** conference, in Goteborg.

- a. Organization of a workshop: How to use the System Engineering Initiative for Patient Safety (SEIPS) to make Healthcare more Sustainable? (Romaric Marcilly, Thomas Engelsma, Valentina Lichtner, Linda Peute)
- b. Organization of a panel: Understanding System Coordination As An Enabler of One Digital Health (Craig Kuziemsky, Shilo Anders, Linda Peute, Laurie Novak).

The discussions should lead to submitting a paper by the end of 2023

- E. **Seminars.** The members co-organized a series of two seminars on Human and Organizational Factors and Pharmaceutical Safety (Lille, June 20th 2022; Dublin, September 29th 2022)

Provide details of the WG/SIG's Outreach - Recruitment and engagement of new members and target communities, publicity, and representation at major events and/or on social media.

- A. **Conferences.** The WG activities are promoted as soon as possible during the conferences the WG took part to (MIE, HEPS, CSHI, Medinfo, ICIMTH)
- B. **Open to other communities.** For the purpose of its projects, the WG contacted and recruited experts from other communities (ex. pharmacists).
- C. The WG supported the **exchange of international students in Medical Informatics applying Human Factor engineering methods in Health informatics.**
 - a. We increased collaboration with the IPHIE (International Partnership in Health Informatics Education) and proposed a Novel Hybrid short-term Exchange Program in Biomedical and Health Informatics Education. We exchanged two students from Heidelberg and will also promote a new exchange in September.
 - b. We supported the 4 month exchange of a Student from the Amsterdam UMC to The Human Factor engineering group of prof. Baysari in Sydney.
 - c. We will support the exchange of two students from the University of Wales Trinity Saint David, from prof. Phillip Scott
- D. The **Masterclasses** attracted new Human factor researchers who attended the online conference: establish an international academic workspace eHealth Living & Learning Lab at the Amsterdam UMC for HFE Methods in HI collaboration and international online teaching at global Medical Informatics curricula. In Sept '22 the elective program sustainable eHealth, consisting of 18 European Credits, was launched adhering to IMIA educational recommendations.
- E. **Objective** for next year: to organize 3 online seminars / year during which senior and junior researchers could present their current research activities or last publications.

Current List of members

Melissa Baysari, Tomasso Bellandi, Elizabeth Borycki, Frederic Ehrler, Peter Elkin, Dorte Furstrand, Maria Hägglund, Juell Homco, Aviv Shachak, Alexander Hörbst, Stephanie Jansen-Kosterink, Monique Jaspers, Ignacio Jauregui, Johanna Viitanen, Andre Kushniruk, Craig Kuziemsky, Elin Lehnbom, Francisca Leite, Blake Lesselroth, Valentina Lichtner, Daniel Luna, Helen Monkman, Christian Nøhr, Carlos Otero, Rune Pedersen, Sylvia Pelayo, Raquel Santos, Isabella Scandurra, Nuno-André Silva, Mari Tyllinen, Lex Van Velsen, Sidsel Villumsen, Wu Yi Zheng, Katie Zhu, Oluwatosin Abiola, Soumyajit Das, Panos Bonotis,

Nicholas Garbien, Matthias Ganzinger, Thomas Engelsma, Liesbeth van den Berg, Tamasine Grimes, Alison Butler, Romaric Marcilly (vice-chair), Linda Peute (chair).

Please note that not all members have the same level of involvement in the group. Some are active and others are observing. Their level of involvement changes over time depending on the opportunity.