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Annex No. 10 to the MU Directive on Habilitation Procedures and Professor Appointment Procedures

HABILITATION THESIS REVIEWER'S REPORT

Masaryk University	
Applicant	RNDr. Martin Komenda, Ph.D., MBA
Habilitation thesis	Empowering a Data-Driven Approach in Medical Education and Healthcare
Reviewer	Prof. Henry W W Potts, Ph.D., M.Sc., B.A.
Reviewer's home unit, institution	UCL Institute of Health Informatics, Faculty of Population Health Sciences, University College London, UK

I have enjoyed reading the habilitation thesis submitted by Dr Martin Komenda. It was clear and easy to read. It presents a significant body of work in health informatics. The thesis covers two main topics:

- The development of MEFANET, a collaborative network covering multiple Czech and Slovak universities, and associated systems in medical education
- The development of the National Health Information System (NHIS) and National Health Information Portal (NZIP) providing access to Czech health data, with a particular focus on COVID-19

The submission includes 8 papers published in good quality journals that present details of key work described, while multiple other interesting projects are also summarised in the thesis.

I think the thesis demonstrates a good research portfolio, including the development of platforms from an interdisciplinary perspective, with good stakeholder engagement. There is a very strong approach to networking described in the “Societal Impact” section. This all constitutes a significant contribution to the field, with practical, real world outputs. The NZIP appears to be of national importance. The thesis also describes good practice in sharing know-how, including organising several conferences; and a good set of student projects supervised (pp 22-6).

The development of several health data outputs (pp 50-3) is impressive. It will be interesting to see how much usage these get in the future. The COVID-19 work has, unsurprisingly, received most attention in the academic literature so far.

Papers

Komenda et al. Medical faculties educational network: Multidimensional quality assessment. Computer Methods and Programs in Biomedicine 2012; 108(3): 900-909.

This lays out the complex requirements of setting up MEFANET and shows good initial data on usage in terms of published contributions.

Dr Komenda was the first author of the publication, led on the writing and shared in the general idea behind the work.

Schwarz et al. Interactive algorithms for teaching and learning acute medicine in the network of medical faculties MEFANET. Journal of Medical Internet Research 2013; 15(7): 298-311.
This paper presents the education portal AKUTNE.CZ as part of MEFANET. There is a good description of the processes followed. It was good to see Moodle integrated into AKUTNE.CZ. The interactive algorithms developed make for an interesting approach and it is valuable to have the detailed description of how these were developed. It was good to see an evaluation of the educational materials with students. This is a straightforward self-report outcome, which has its limitations, but is a sensible place to start. The sample size is adequate, if not great. The paper could have used some statistics in the results section, like providing confidence intervals, but the overall results are clear and support the claims made.

Dr Komenda was the third author and contributed ideas.

Komenda et al. Curriculum Mapping with Academic Analytics in Medical and Healthcare Education. PLoS One 2015; 10(12): e0143748.
Curriculum management in medical education is a challenge, so this paper presents an interesting potential solution. The paper does what it promises to do, explaining the method suggested. It would be interesting to see how useful medical educators find this in practice.

Dr Komenda was the first author and the main driver behind the work.

Komenda et al. Practical use of medical terminology in curriculum mapping. Computers in Biology and Medicine 2015; 63: 74-82.
It was good to see the paper follow guidelines for a scoping review, although it would have been valuable to see more detail of how the scoping review was conducted and what it found. MeSH makes sense as a choice for the study and the paper's results integrating MeSH into OPTIMED are valuable.

Dr Komenda was again the first author and the main driver behind the work.

Komenda et al. Complex Reporting of the COVID-19 Epidemic in the Czech Republic: Use of an Interactive Web-Based App in Practice. Journal of Medical Internet Research 2020; 22(5): e19367
The COVID-19 pandemic created extraordinary circumstances for all, not least for those conducting research with important real-world applications that had to be performed as quickly as possible, so I was particularly impressed with the speed with which the work described in this paper was carried out. This was nationally important work and a great example for others.

Dr Komenda was the first author of the publication, led on the writing and on the underlying ideas.

Krejčí et al. Development of the Czech Childhood Cancer Information System: Data Analysis and Interactive Visualization. JMIR Public Health and Surveillance 2021; 7(6): e23990
These sorts of tools are valuable for researchers, clinicians and even the public. Making it possible for users without mathematical backgrounds to still perform analyses is an interesting addition. I would liked to have seen more detail on the user testing and how this influenced the design of the tool.

Dr Komenda was the penultimate author, but made significant contributions to the idea and the writing.

Komenda et al. Sharing datasets of the COVID-19 epidemic in the Czech Republic. PLoS One 2022; 17(4): e0267397
This is a follow-up to Komenda et al. (2020) above. It covers well the challenges – legal and technical – in making health data publicly available.

Dr Komenda was the first author of the publication, led on the writing and on the underlying ideas.

Komenda et al. Control Centre for Intensive Care as a Tool for Effective Coordination, Real-Time Monitoring, and Strategic Planning During the COVID-19 Pandemic. Journal of Medical Internet Research 2022; 24(2): e33149
This was another clearly useful data tool developed at pace. Again, there was good stakeholder engagement in development of the tool.

Dr Komenda was the first author of the publication, led on the writing and on the underlying ideas.

Reviewer's questions for the habilitation thesis defence (number of questions up to the reviewer)

1. Do you have examples of the curriculum mapping method (Komenda et al., 2015) leading to changes in how a programme was taught?

2. You designed the Childhood Cancer Information System to be accessible to the general public. Do you have any data or other feedback on how much members of the public are accessing the tool?

Conclusion

The habilitation thesis entitled Empowering a Data-Driven Approach in Medical Education and Healthcare by RNDr. Martin Komenda, Ph.D., MBA **fulfils** requirements expected of a habilitation thesis in the field of Informatics.

Date: 1 Sep 2025 Signature: