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Conceptual Modeling

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Preface

This year's 39th ER conference is dedicated to a topic that represents a phenomenon unprecedented in the history of humankind. The digital transformation encompasses all areas of life and work. It is accompanied by new types of services, new forms of division of labor, interpersonal interaction, and international cooperation. It thus has a direct impact on how we see the world and what perspectives we develop for our future lives. Last but not least, we can assume that the ongoing digitalization will also have a lasting impact on scientific research. Conceptual modeling is of central importance for the successful management of the digital transformation. On the one hand, all areas of life and work are increasingly permeated by software. Conceptual models are required not only for the development of software, but also for the appropriate structuring of data. They promote reuse, integration, and integrity. Furthermore, conceptual models are also suitable for supporting the use of software. They help to open the black box as to which software often presents itself and thus contribute to transparency and user empowerment. At the same time, the digital transformation also brings with it specific challenges for modeling research. In order to support the design of software that can be adapted to profound changes of requirements, powerful abstractions are needed that are beyond the capabilities of today's prevalent modeling languages. In addition, AI research, especially in the field of machine learning, is associated with a quasi-existential challenge of modeling research. Thus, some proponents of AI research already foresee the end of traditional conceptual modeling. It would last too long and would be too expensive. It could be better handled by machines. Such daring hypotheses may be seen as a threat. But above all they are an occasion to reflect on fundamental questions of conceptual modeling, such as the difference between concepts and classifications or between human thought and data processing. Probably the central question is not whether and when machine learning can take over the human activity of conceptual modeling, but how the inductive analysis of large amounts of data and human abstraction can be synergistically combined.

Given the fascination that the digital transformation holds for conceptual modeling research, it is not surprising that we were able to quickly agree on this conference topic during last year's ER conference in Salvador, Brazil. At that time, none of us had any idea that the digital transformation would be significant for the conference in a completely different, less-than-pleasant way. The ongoing COVID-19 pandemic made it necessary for this year's conference not to take place as usual: colleagues could not meet for personal exchange and there was no opportunity to get to know a foreign city and enjoy local food. This was all the more regrettable as Vienna is one of the world's most attractive conference venues. COVID-19 also meant that many of us were burdened with additional obligations. We therefore considered it appropriate to extend the deadline for the submission of contributions. Unfortunately, this put increased time pressure on the review process. Nevertheless, we are glad that in the end the reviews were received on time.

The first-time organization of the ER as a virtual conference was associated with a number of challenges. For example, organizing the program proved to be difficult because it was almost impossible to find a schedule that would accommodate the many time zones in which the participants would be located during the conference. We were forced to make compromises here, which led to considerable limitations for individual time zones. We regret this very much and hope for the understanding of those concerned. In addition, it was not possible to foresee the impact that virtualization would have on the number of submissions. We are glad that the response to the call was considerable despite the crisis. A total of 143 contributions were submitted, of which 28 were accepted as regular papers and 16 as short papers. The papers cover a broad spectrum of innovative topics, thus underlining the great importance and attractiveness of research on conceptual modeling.

We hope that the papers will find your interest and wish you an inspiring read. Finally, we would like to thank the authors, whose contributions made the conference possible, the many reviewers for their outstanding commitment in preparing more than 400 expert opinions, and last but not least the senior editors, without whose support we would not have been able to cope with the evaluation of the expert opinions.

November 2020

Gillian Dobbie
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