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Peer Review

Review of: "Conceptual Entity-Relationship Model: Beneath the Simplicity and Staticity"

Katarzyna Ragin-Skorecka[1]

1. Faculty of Engineering Management, Technical University of Poznan, Poland

The article is written in an orderly and understandable manner. The language of the argument is correct, key concepts are clearly explained, and the argumentation remains logical. Thanks to this, the text, despite the introduction of new terms and occasional philosophical references, is accessible to the reader with an engineering background.

The paper presents an interesting perspective on the limitations of the traditional Entity-Relationship (ER) model in terms of capturing the semantics and dynamics of systems. The author argues that, despite its simplicity and popularity, the ER model suffers from oversimplification and neglect of dynamic aspects, which leads to incomplete and inconsistent domain representations. He also points out the lack of direct compatibility between the ER model and the relational model and the difficulties in expressing semantic nuances.

As an alternative, the author proposes the Thinging Machines (TM) model, based on a single concept – “thimac” (thing/machine), which combines statics with integrated dynamics through five basic actions: creating, processing, releasing, transferring, and receiving. This approach differs significantly from the classical ER, where entities, attributes, and relations are treated as separate constructs. This paper presents how ER model elements can be mapped as “thimacs” in TM, allowing for the natural inclusion of system dynamics. Case examples—a logging system and a company database—illustrate how ER models can be transformed and simplified using TM.

In conclusion, the author emphasizes that the TM model offers greater flexibility and the possibility of simplifications, including the reconstruction of the classical ER model. He also claims that TM is better suited to the relational data model. The whole combines philosophical reflection with an attempt at the practical application of an alternative approach, supported by specific examples. Although the presented

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cases are simplified, they show the potential of TM, and further research on more complex models can verify the presented conclusions.

Declarations

Potential competing interests: No potential competing interests to declare.