

How Do You Choose the Right Digital Twin Software Provider?

An Artificial Intelligence Approach

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Abstract

Introduction: Digital twins are currently receiving a great deal of attention both in science and in practice. The number of software providers and the variety of applications are constantly increasing, the requirements of the software for the user are high, the implementation is complex and the available information is limited. Under these circumstances, it is a challenge for interested parties to decide on a suitable digital twin software provider. This research aims firstly to provide interested parties with a catalogue of decision criteria and secondly, a methodology for selection.

Method: To this end, information on $n = 153$ digital twin software providers - based on ten rankings - and selection criteria was collected as part of secondary data research. Furthermore, the selection of suitable providers was tested using the example of an Energy Digital Twin via machine learning algorithms.

Results: In the first step, a data set was developed on the basis of the available sources. In the second step, a case study for digital energy twins was derived using suitable selection criteria. The third step was to develop and then test a machine-learning approach for selecting suitable software providers.

Discussion: The results show that suitable criteria and machine learning algorithms can be used to achieve meaningful results - even in complex decision-making situations. The dynamically developing provider market, inconsistent information about the software of individual providers, the complexity of the software as such and the small number of scientific and practice-orientated specialist publications proved to be particular challenges for decision-making. As a result, there is a need for research in relation to studies on the development of generally accepted selection criteria and the creation of a database for digital twin software providers.

Keywords: digital twins software provider, artificial intelligence algorithm, energy twins, case study