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Engineering design performance management – from alchemy to science through ISTa

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Zusammenfassung

The drive for performance is omnipresent in modern society. We believe this to be true, although we only have a vague idea of what “performance” really means. The demand for management is omnipresent in modern society. We accept this to be true, although management theory is a science barely out of its infancy (Who wishes to be supervised by an infant?). Performance management is considered to be the need for the hour in modern society. We are told this is true, although we feel that we are trying to cope with something that we have very little comprehension of. Engineering is the omnipresent backbone of modern society. We experience this to be true, although we acknowledge that design is least as much an art as it is a science, a world where uncertainty rules. The impact of Information Society Technology (IST) is omnipresent in modern society. We understand this to be true; although we know that there is no point in automating something we don't understand. Somewhat ironically, one could conclude that Engineering Design Performance Management (EDPM) is about the challenge to handle the uncertain and appraise the unknown. Not to forget about IST embarked on a mission to automate everything it possibly could to pretend that there are ready answers. This is like alchemy, but for performance. Alchemy hovered between worlds. So does contemporary performance management hovering between fiction and reality. Alchemists proposed to use the philosopher's stone (materia prima), a mysterious, unknown substance that they believed to have the power to transmute base metals into gold. So does contemporary performance management by hailing IST as its “Magnus Opus”. Without a doubt, it is high time to rebuild a firm foundation of performance management. We need a consistent framework addressing the relevant aspects of performance management from the abstract level to the concrete level. Only than IST will be able to unfold its full potential, and deliver on its promises. The strategic potential of IST does not lie in empty automation that enforces unrealistic and oppressive processes. It lies in enabling better decision making in a highly complex environment of change, uncertainty, risk, and urgency.

- Vollständige Referenz
- BibTeX

Matzke, W.-E., (2005). Engineering design performance management – from alchemy to science through ISTa. In: Kaschek, R., Mayr, H. C. & Liddle, S. (Hrsg.), Information systems technology and its applications, ISTA' 2005. Bonn: Gesellschaft für Informatik e.V.. (S. 154-179).


```
@inproceedings{mci/Matzke2005,
author = {Matzke, Wolf-Ekkehard},
title = {Engineering design performance management – from alchemy to science through ISTa},
booktitle = {Information systems technology and its applications, ISTA' 2005},
year = {2005},
editor = {Kaschek, Roland AND Mayr, Heinrich C. AND Liddle, Stephen} ,
pages = { 154-179 },
publisher = {Gesellschaft für Informatik e.V.},
address = {Bonn}
}
```

Dateien Groesse Format Anzeige

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Mehr Information

ISBN: 3-88579-392-X
 ISSN: 1617-5468
 Datum: 2005
 Sprache:  (en)
 Typ: Text/Conference Paper

Sammlungen

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Matzke, W.-E.: Engineering Design Performance Management – from Alchemy to Science through ISTa. In: Kachek, R., Mayr, H., Liddle, S. (eds.) Proc. 4th Int. Conf. on Information Systems Technology and its Applications, ISTA 2005, Palmerston North, New Zealand, May 23-25. LNI, vol. 63, pp. 154–179. Gesellschaft für Informatik, Bonn (2005)Google Scholar. Find out more from ISTA Headquarters or visit www.ista.org. TESTING RATIONALE. The need for testing comes from the difficulty of predicting what will happen in large-scale operations, coupled with the requirement to make decisions prior to implementation. Essentially, every test comes from the need to make a decision. Engineering tests seek to find a specific performance quantity, such as the deceleration experienced by a product in a package when dropped from some height, as in an instrumented drop test. Testing expectations and objectives. ISTA tests

establish lower limits for packaged-product performance, but in general do not set upper limits. Therefore, used in their most straightforward pass/fail fashion, ISTA tests do little to detect over-packaging situations. Science and Engineering, although complementing each other, have different purposes and do not use exactly the same kind of knowledge. The logic of Science is the logic of the “what-is”; the logic of Engineering is the logic of “what-might-be”, the logic of “what-is-possible”. Truth is the purpose of Science; to produce useful things and to generate human benefit is the purpose of Engineering. In science, truth is an end; in Engineering truth is a mean for generating human benefit and usefulness. through (positive and negative) feedback and feedforward loops, in order to generate mutual synergies where the whole would be greater than the sum of its parts. Propositional knowledge is seen as objective, public knowledge of the external world. Engineering entropy for the inverse design of colloidal crystals from hard shapes, Science Advances (2019). DOI: 10.1126/sciadv.aaw0514. Journal information: Science Advances. Provided by University of Michigan. Citation: 'Digital alchemy' to reverse-engineer new materials (2019, July 8) retrieved 10 November 2020 from <https://phys.org/news/2019-07-digital-alchemy-reverse-engineer-materials.html>. Thank you for taking your time to send in your valued opinion to Science X editors. You can be assured our editors closely monitor every feedback sent and will take appropriate actions. Your opinions are important to us. We do not guarantee individual replies due to extremely high volume of correspondence. E-mail the story.