

# Domain Science &\* Engineering A Foundation for Computation for Humanity.†

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## Abstract

Physicists abstract and model "the world around us". Domain scientists and engineers, it is suggested, abstract and model tangible aspects of human made systems such as air traffic, banking, consumer commerce, container lines, health care, manufacturing, pipelines, railway systems, web-based systems, or fragments thereof. We shall analyse one kind of formal science and science-based engineering, one that can tackle the (informal and formal) description of systems in which human actors play a significant rôle: either (actively) by monitoring & controlling such systems or (passively) by being positively or adversely affected by good, respectively bad designs of IT systems that serve to handle one or another facet of such systems. We argue that 'Domain Science & Engineering' is a relatively "new" science that transcends conventional computer and computing sciences. We shall also argue that the scientific and engineering pursuit of domain science & engineering should result in models of a number of domains described both informally and formally such that teaching material can be made readily available for the use in primary, secondary and tertiary schools whereby precise models of complex, man-made systems can be made easily accessible. So, just as children are taught ("laws of") physics and become familiar with 'mother nature', that is, enable us to cope with the physical world around us, likewise children can be taught ("laws of") of man-made domains preparing us, in our societal life for a better control of those domains. The paper concludes with a discussion of the 'humanities' aspects of domain science and engineering – both as concerns the humans who are the targets of "domain engineered" IT systems, as well as concerns the humanities fields of philosophy.

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\*We use the connection '&' instead of the more conventional 'and'. The reason can be explained as follows: '*A and B*', to us, signals that two topics, *A* and *B* are covered. whereas '*A & B*' signals that there is one topic named by the composite '*A & B*'

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