

MIRCE Science

The philosophy of MIRCE Science is based on the premise that the purpose of existence of any functionable system¹ is to do the work, with the expected performance, which is considered to be done when functionability² is maintained. Typically, performance of functionable systems becomes known through the end off life statistics³.

Having realised that “performance cannot be improved by doing better statistics”, for over five decades Knezevic [1] systematically studied the behaviour of numerous functionable systems with the aim to create a body of knowledge that will enable to predict the performance of the future functionable systems. This endeavour culminated in the creation of MIRCE Science, which is a theory of the motion of functionable systems through Mirce Space resulting from any actions whatsoever and the actions required to produce any motion accurately proposed and defined.

In MIRCE Science, from functionability point of view, at any instant of time there is a probability of work being interrupted by occurrences of negative functionability events, resulting from failures of consisting components, natural causes, human actions or their interactions. For the work to be continued, humans undertake appropriate positive functionability actions, like: perform maintenance tasks, change of the mode of operation and so forth. Thus, a life of functionable systems is perceived as a consequential motion through positive and negative functionability states. Scientific understanding of the physical mechanisms that generates the occurrences of functionability events requires them to be considered within a physical scale between 10^{-10} m (atomic scale) and 10^{10} m (solar system scale). These mechanisms, together with the human imposed rules, uniquely shape the work done and resources consumed.

MIRCE Science consists of axioms, equations, concepts and methods that explain and predict performance of functionable systems, for each of physically feasible alternative, enabling engineers and managers to select the preferential solution in accordance to the given criterion.

Reference:

[1] Knezevic, J., Reliability, Maintainability and Supportability: A Probabilistic Approach, pp 291, McGraw-Hill, London, UK, 1993.

[2] Knezevic, J., The Origin of MIRCE Science, pp. 232, MIRCE Science, Exeter, UK, 2017, ISBN 978-1-904848-06-6

¹ Functionable system is an interactive entity consisting of functional system, resources allocated and rules applied. [1]

² Functionability, n, is the ability of functionable system to perform at least one measurable function at a given instant of time. [1]

³ Boeing 747, registration number N747PA, which belonged to Pan Am transportation system, have delivered the work of 80,000 flying hours and received 806,000 maintenance man-hours, during the 22 years of in-service life