

# Mirce Mechanics

Science for Managing In-service, Reliability, Cost & Effectiveness

**I**nspired by the work of scientists and equipped with the methods of their studies, during last 40 years I have been focused on systematic and rational studies of the in-service reliability, cost and effectiveness of transportation, energy, communication, defence, health and similar human created and managed systems. The purpose of research was to create generic understanding of the functionability<sup>1</sup> phenomena (failures, bird strike, repairs, inspections, testing etc.) that, once scientifically understood, could be managed in the way that reduces the number of in-service interruptions and operational costs<sup>2</sup>, which in turn will generate profit for private companies or increases the reliability for public services like health, transportation, tourism up to the national defence.

**T**o rationally understand motion of maintainable systems through functionability states resulting from atomic, environmental and human actions, I have established the MIRCE Akademy at Woodbury Park in 1999. Staff, Fellows, Members and students of the Akademy have endeavoured to subject phenomena of the motion of functionability to the laws of science and mathematics to:

- Determine the patterns of the motion of maintainable systems through functionability states and to measure in-service functionability performance (technical and economical).
- Understand mechanisms of the motion of maintainable systems through functionability states within the physical scale from  $10^{-10}$  to  $10^{10}$  metre (from atoms to solar system)
- Define the scientific and mathematical scheme for the prediction of functionability performance and associated measures of in-service reliability, cost and effectiveness for a given: maintainable system in a given in-service conditions.

**A** generated body of scientific knowledge constitutes Mirce Mechanics whose axioms; formulas, methods and rules enable predictions of the emerging functionability trajectory of the future transportation, communication, navigation and many other maintainable systems to be designed and consequently managed in the manner to deliver business plans or operational objectives with maximum effectiveness and minimum investment in operational, maintenance and logistics support resources.

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<sup>1</sup> Functionability, n, defined as the ability of being functional through life, in the book Reliability, Maintainability and Supportability – A probabilistic Approach, by J. Knezevic, pp. 291, McGraw Hill, London 1993. ISBN 0-07-707691-5

<sup>2</sup> 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