

## **DISCRETE EVENT MODEL OF MAINTENANCE FREE OPERATING TIME FOR AEROSPACE BASED TELEMATICS SYSTEMS**

IGOR KABASHKIN

*Transport and Telecommunication Institute*

1 Lomonosova iela, Rīga LV-1019, Latvia

E-mail: `kiv@tsi.lv`

The aerospace industry is moving towards a new paradigm for the statement of reliability specifications. This paradigm is not a technical metric inherent to a system in isolation, but rather encompasses the wider objectives, operational profile and logistic priorities of its customer. This customer focus is encapsulated in the metrics Maintenance Free Operating Period. This metric describes the duration of effective system operation for systems where faults may not be repaired. New metric currently cannot be derived from a theoretical consideration of individual systems metrics; rather they have to be derived empirically. For that reason a discrete event simulation has been developed which allows the new metric to be estimated.

The paper describes a discrete event simulation model that allows a system designer to investigate the means and feasibility of meeting an operating period requirement. The model takes into account the system reliability, the proposed mission tasking and the maintenance support regime.

The basic simulation output is the probability of achieving an operating period of a desired length. Comprehensive listing of particular simulation events is optional. The simulation will also show the effects of a scheduled repair policy, prognostic usage, repair management, etc. on operating success, thus permitting an interactive customer-designer dialog and truly optimum product design.