Performance Metrics

Application Performance Metrics

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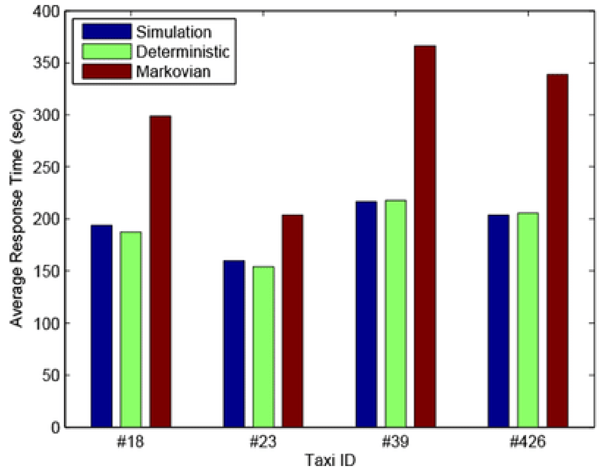
Team ID	PNT2022TMID43270
Project Name	Signs with smart Connectivity for Better Road Safety
Maximum marks	10 Marks

Metrics for IoT-Enabled Products

Every time there is an industry-wide adoption of a new capability or technology, metrics soon follow. Some 50-plus new metrics, which always lag the business initiatives in practice, are typically tried out by companies and analysts as they learn their way to success. People talk. Researchers research. Articles are written. Eventually, the cream rises to the top after a couple decades and five to 10 become frequently used.

Project & Product Metrics: Although these two categories are absolutely distinct, it is best to handle them together as they occur concurrently. A project is a temporary organization vehicle used to develop products. At most companies, the project continues a tad after launch and then the product reverts to being measured with other company products such as Corporate-Level Metrics. Prior to launch, the product is the purpose of the project.

In “Metrics for IoT in the Product Development Process,” the focus was on project metrics. Here we will look at product metrics, no small subject. It won’t be just about the IoT. It will be equally about the IIoT, the Industrial Internet. Manufacturing managers will compete with marketing managers for real estate on the product and for subsequent product life-cycle big-data tracking capabilities.



Taxi ID	Experimental Result	Deterministic Model	Markovian Model	Relative Error
#18	193.7868	187.6446	298.5885	3.17%
#23	159.5771	153.7986	203.6725	3.62%
#39	216.5673	217.7914	365.9622	0.57%
#426	203.5256	205.3785	338.7867	0.91%

Basic models of IoT services

In this section, we present fundamental models of both IoT services and IoT systems. Dynamic behaviours of atomic IoT services are formulated by queueing models, while the systems consisting of a number of IoT services with complex interrelationships are described as queueing network models. Basic model parameters and analytical methodologies will be presented.

Performance analysis of IoT services

In order to obtain analytical solutions of the queueing models, some assumptions on the distributions of arrivals or service times have to be made. Some of the assumptions are mostly in conformity with reality, while the others may give lower-bound estimations on the performance metrics. In this section, different assumptions are discussed, under which mathematical analyses are conducted. The analyses are expected to provide performance estimations of IoT systems in different scenarios and thus to guide the optimisation of system design

Quality of Code.

To evaluate quality of a software part in an IoT system, a metric using the number of defects and the amount of newly added code can be used: QC = DT P +DF KCSI , where DT P is the number of defects found in the testing phases, DF is the number of defects found in a production run of the system, and KCSI is the number of new lines of source code or changed code in a development phase, scaled in thousands [13]. Chen et al. suggest using KCSI instead of the total number of code lines to emphasize actual quality achieved in a particular development phase