*Sarveshwaran Sampathkumar*

*017387654*

*Lab 5*

**THE DIMENSIONS OF MAINTENANCE by E. Burton Swanson**

**1. Based upon what you read in the paper, what do you think the state of software maintenance was at the time of the paper's publication?**

The state of the software maintenance was termed as “iceberg” at the time of the paper`s publication. The reason for terming it as “iceberg” was because there were too many things that were happening in software maintenance did not meet the eye. During that time, almost 40 percent of the software effort in Great Britain was dedicated to the maintenance. Moreover, the amount of time spent by the organization on the software maintenance placed a constraint on the effort needed to put into new system development. This was the state of the software maintenance at the time of the paper`s publication.

**2. What are the "bases of maintenance"?**

Bases of maintenance (i.e.) the causes and choices which motivates the software maintenance are listed below:

1. **Corrective** – Maintenance performed in response to the failures of the below mentioned types may be termed as Corrective Maintenance.
   1. Processing Failure
   2. Performance Failure
   3. Implementation Failure
2. **Adaptive** – Maintenance performed in response to the changes in data and processing environments may be termed as Adaptive Maintenance.
   1. Change in data environment
   2. Change in processing environment
3. **Perfective** – Maintenance performed to eliminate processing inefficiencies, enhance performance, or improve maintainability can be termed as Perfective Maintenance.
   1. Processing inefficiency
   2. Performance enhancement
   3. Maintainability

**3. How many metrics are proposed for software maintenance in this paper? Which of these can be done in an automated way?**

There are 26 metrics proposed for software maintenance in this paper. Out of given 26 metrices, the following metrices can be computed automatically using mathematical formulas: S9, S16, S19, S22, S25 and S26.

|  |  |
| --- | --- |
| **Metrics** | **Definition** |
| S9 | Average number of processing failures occurring per run undertaken |
| S16 | Average net benefits associated per personhour of perfective maintenance completed |
| S19 | Average number of program changes made per program maintained |
| S22 | Net addition to total number of source statements maintained, due to program changes made |
| S25 | Average number of person-hours spent per processing failure correction |
| S26 | Average number of person-hours spent per source statement added by program changes made |

**4. In some of the metrics listed, the author speaks of a "run". What is it and why is it?**

Out of all the 26 metrics, the author speaks of a “run” in S7, S8 and S9. Run is a measure of number of program runs undertaken since the installation. In general RUN refers to the program execution. With respect to the metrics,

* S7 – Total number of program runs undertaken – This represents the sum of the run counts associated with the program maintenance over the interval of measurement.
* S8 - Total number of processing failures occurring during program runs undertaken – This represents the sum of the failure counts associated with the programs maintained, over the interval of measurement.
* S9 - Average number of processing failures occurring per run undertaken – This may be termed as 'processing failure rate."

From above we can see that the program execution (run) is used to determine different metrics.