

Quality Model

What is a Quality Model?

According to ISO/IEC [ref], a **quality model** is a conceptual representation that determines which **quality** characteristics will be taken into account when evaluating a software product.

Why use them?

In our study, we used quality models to compose measures and to define their relationships among quality characteristics. The goal is to characterize trustworthiness of a system, defining how the measures should be aggregated and what procedures have to be used to compute a final trustworthiness score.

How does it work?

Figure 1 presents an example of a generic Quality Model. A set of **attributes** is chosen based on what one knows are important to characterize the system (e.g. memory usage, throughput) and can be quantified (in the figure, for example, Attribute1, Leaf Attribute12 are representing these attributes). When these attributes are input measures (for example, in the Figure 1 LeafAttribute12) adequate normalization functions must be configured and applied. For that end, the definition of **thresholds** is necessary once they specify the maximum and minimum values for the inputs to be accepted.

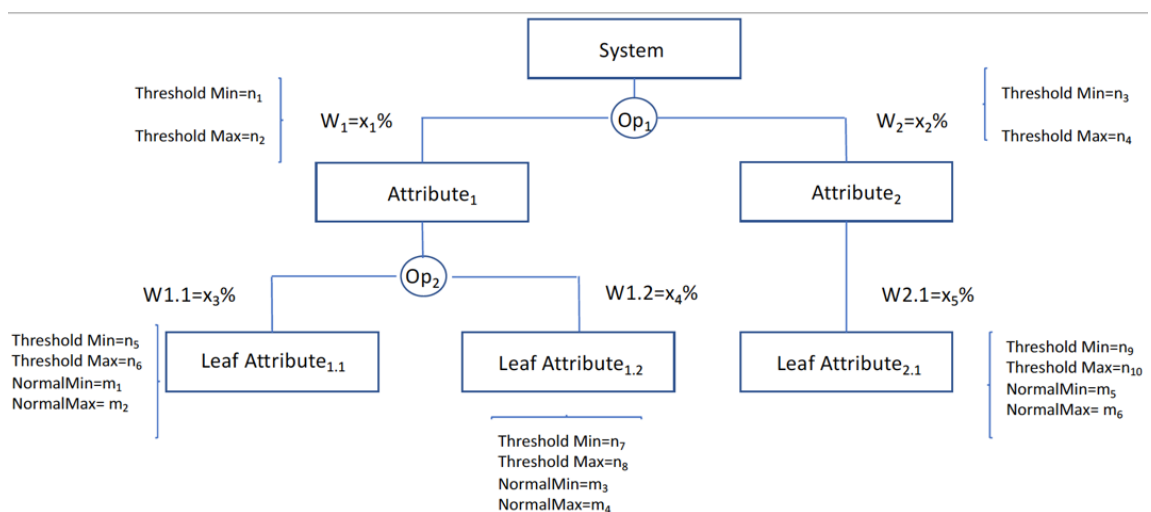


Figure 1. Example of a Quality Model.

The values for each component are influenced by an adjustable element **weight**, which specifies a preference over one or more characteristics of the system. The final score is computed using the aggregation of the values of the attributes, starting from the leaf-level to the root attributes (in a tree structure), using **operators** that describe the relation between them. Different types of operators may be used to define the conditions under which sub-attributes are aggregated.

Now that the concept of the dashboard is understood, we suggest that to evaluate it, do at least the following actions:

- (i) Change the weight of Information Loss attribute to 0.2 (20%) and Reidentification Risk to 0.8 (80%);
- (ii) See and write down the score of the Link Latency attribute;
- (iii) See and write down the score of the Service Trustworthiness attribute.