# ANEXO III - Fragmento de Modelo de Calidad de CloudIoT para AAL

**Métricas para Cloud Computing**

| Característica | Sub Característica | Sub-Sub Característica | Atributo | Métrica | Heurística (Explicación de lo que se está midiendo) |
|---|---|---|---|---|---|
| Security | Confidentiality | Data Management | Data classification | How data classify? | Based on its value, location where it stores, value by any security breach etc. classified as sensitive, confidential, public. |
| | | Critical Data Management | Critical data store | How critical data handle, store and access? | Through application or by other means, location with encrypted or plain text for store, appropriate access control mechanism. |
| Usability | Protection against user errors | Error recovery | Solutions | Does the system indicate the error and constructively suggest a solution? | The system should indicate the problem and the way to solve it so that there is an immediate recovery. |
| Reliability | Fault tolerance | Fault handling | Failure detection | X = 1 - A/B<br>A: number of failed operations,<br>B: total operations. | 0<= X <= 1, The closer the value of X is to 1, the higher the reliability |
| | | | Failure resolution | X= 1- A/B<br>A = number of failures resolved<br>B = total number of failures actually detected | 0<= X <= 1, The closer the value of X is to 1, the higher the reliability |
| | Data recoverability | | Data Backup | How often critical data, log, audit trail backup. | Measure backup frequency per day, per week or per specific time and techniques to do backup. |

**Métricas para Fog Computing**

| Característica | Sub Característica | Sub-Sub Característica | Atributo | Métrica | Heurística (Explicación de lo que se está midiendo) |
|---|---|---|---|---|---|
| Security | Confidentiality | Data Transmission | Secure level of data transmission | How secure is data transmission? | Cryptographic algorithm, algorithm to generate key, key length. |
| | Integrity | Synchronization | Concurrence | How do race conditions handle when more than one user intends the same time to use shared data? | Subjective evaluation by appropriate techniques to ensure synchronization. |
| Usability | Ability to recognize suitability | User guidance | System messages | Are the messages presented in a concise and meaningful way? | Message related to less working memory. |
| | Ability to be used | Portable Executions | Device independence | Is the operability of the system similar across platforms? | Ratio of platforms with the same operability (number of platforms with the same operability by the number of platforms). |
| Reliability | Mature | Connection validation | Connection strength | X = A/B<br>A: is the number of input elements that verify valid data.<br>B: is the number of total input elements that could verify valid data. | Measure how seamless the connection of each IoT application is. The range of X is 0..1 and the value 1 is the best. |
| | Availability | | Device Availability | X= A/B<br>A: Time percentage of a device availability<br>B: Period of time<br>How much time a specific device is available for normal operation? | X =1 implies the device is available for the whole given period. |

**Métricas para Edge Computing**

| Característica | Sub Característica | Sub-Sub Característica | Sub-Sub-Sub Característica | Atributo | Métrica | Heurística (Explicación de lo que se está midiendo) |
|---|---|---|---|---|---|---|
| Security | Confidentiality | Password Management | | Password Strength | How strong is the user password? | Password length, minimum combination with letters, numbers and other characters, restrict common word for password selection, lifetime of password. |
| | Responsibility | Authentication | | Authentication protocols | X = A/B | A = Number of provided authentication protocols (e.g.,User ID/password or IC card).<br>B = Number of required authentication protocols in the specification. |
| Usability | User Interface | | | Customizability | Does the user can customize the interface? | Appearance customizability of user interface. |
| | | | | Design | Does it have an aesthetic and minimalist design? | The system should not contain unnecessary information, as it will distract the user. |
| | Aesthetics for the user interface | Consistency | Visual consistency | Functions integrity | Are the various functions in this system well integrated? | The typography, the grid, the sizes, the color palette, the images used, among other elements must be well defined in the interface design, to be able to use them in the same way throughout the web or application. |
| Reliability | Mature | Mistake predictability | | Deal with upcoming mistakes | X = A/B<br>A: Number of the failures of the system frequency.<br>B: Number of faults present that may be occurring software errors for the validation data | It measures how the software fails to deal with the next error through the application of AAL.. |
| | Recoverability | Device recoverability | | Data Persistency after resume | Does the device preserve data when it's resumed? | Device mechanisms to persistently store your data for recovery after failure. |