Team 5

## Testing Template

**Usability testing protocol**

1. **Functional requirement**
    - FR19 -Routines can be scheduled
2. **Non-Functional Requirements**
    - NFR14 - The system shall add to the calendar in no more than 3 seconds the activity selected by the user.
    - NFR19 - The system will not allow scheduling two events at the same time.
    - NFR 20 - The user will be able to reach the required information at maximum of 5 clicks
    - NFR21 - The information will be easy to read
    - NFR22 - The information will be easy to understand
    - **NFR23 - The colors used will not hurt the user's vision with prolonged use**
    - NFR24 - The information presented is easy to remember
3. **Usability Attributes**

    As explained above, the usability attributes that we consider in the non-functional requirements that will be the focus of usability testing are:

    - **Efficiency**

      Efficiency in the use of a digital product refers to when mental effort is necessary to perform a task. There are other possibilities to measure efficiency, such as recording the number of clicks the user must make to reach their goal, or using a questionnaire of perceived cognitive effort.
    - **Effectiveness**

      Effectiveness is the capability of producing a desired result or the ability to produce desired output. When something is deemed effective, it means it has an intended or expected outcome.
    - **Satisfaction**

      The satisfaction of the users depends mainly on the fact that they can fulfill their objective with the minimum of effort. If we understand satisfaction in a broader sense, it will also depend on other aspects that influence the user experience, such as the aesthetic quality of the website or application. The most direct way to assess satisfaction is through the use of perceived usability and user experience

questionnaires, of which there are different models such as the SUS (System Usability Scale) [2] or the UMUX (Usability metric for user experience) [ one]. But in a simpler way, the evaluation can consist of a single question that each user answers on a scale of 1 to 10

4. **Define participants**
   5 teenagers residing in Yucatan between the age range of 12 to 19 years old will be selected.

5. **Test Planning**

<table>
<tr><td>Test Scenario</td><td colspan="2">Se cuenta con 7 rutinas disponibles en la sección de rutinas. El usuario inicia desde la página “Destacados”.</td></tr>
<tr><td rowspan="3">Task involved and estimate time</td><td>Ir a la sección de rutinas.<br>Pasos a seguir:<br>- En la barra de navegación pulsar la sección de rutinas.</td><td>4 seconds</td></tr>
<tr><td>Ubicar la segunda rutina y añadirla al calendario en la fecha 10 de enero del 2021.<br>Pasos a seguir:<br>- Ubicar la segunda rutina disponible.<br>- Pulsar el primer icono (tendrá la imagen de un calendario) de la tarjeta.<br>- Seleccionar la fecha 10 de Enero.</td><td>10 seconds</td></tr>
<tr><td>Ubicar la quinta rutina y añadirla al calendario en la fecha 17 de enero del 2021.</td><td>10 seconds</td></tr>
</table>

| | | |
|---|---|---|
| | **Pasos a seguir:**<br>- **Ubicar la quinta rutina disponible.**<br>- **Pulsar el primer icono (tendrá la imagen de un calendario) de la tarjeta.**<br>- **Seleccionar la fecha 17 de Enero** | |
| | **Verificar en el calendario que las rutinas hayan sido añadidas.**<br>**Pasos a seguir:**<br>- **En la parte superior en la sección de rutinas, seleccionar la pestaña "calendario".** | **4 seconds** |
| **Participants** | 5 teenagers residing in Yucatan between the age range of 12 to 19 years old will be selected. | |
| **Artifacts** | Testing template<br>User Testing Non-Disclosure Agreement | |

## 6. Usability Metrics

For each usability attribute there will be a metric.

Eficiencia

1. Efficiency

**1.1. Degree of Compliance Regarding Proportion of Time Spent to Complete Tasks Correctly**

Proportion of time taken to complete "Tasks Completed Successfully for all Users", which refers to the number of "n" users performing "r" tasks.

- **Objective**

  With this metric it is intended to know, for a user and a task, what proportion of the time with which a user completes the tasks correctly, with which it is possible to detect which tasks are the ones that take the most time to complete, and to know the state of efficiency they have the tasks to fulfill the activities of the users.

- **Calculation Method**

  The metric is represented on a numerical scale, the closer the result is to 1, the better it will be.

$$P_{TeCT_P} = \frac{\sum_{j=1}^{j=n} ETtu(j)}{Tp};\ \ 0 \leq P_{TeCT1u}$$

The numerator is obtained from the following formula:

$$EFt = \frac{ET}{Tt}$$

Where ET is the proportion of Task Completed Successfully (from the previous metric) and Tt is the time of the task.
The numerator, from Task Efficiency, EFt, represents the sum of the proportion of Task Efficiency considering Efficacy for each task, and the unit is task/minutes. Tp, the denominator, is the number of proposed tasks.

Rangos de Aceptabilidad:

$$0 \leq \%P_{TeCT_P} \leq 45: no\ satisfactorio.$$

$$45 < \%P_{TeCT_P} \leq 80 : marginal\ (regular).$$

$$80 < \%P_{TeCT_P} \leq 100 : satisfactorio.$$

**1.2. Degree of Compliance Regarding the Proportion of Clicks Employee to Complete Tasks Correctly (%P_CCT_P)**

Proportion of the number of clicks made to be able to comply with a Completed Task (CCT) of the quality indicator in use.

- **.Objective**

  With this metric it is intended to know the proportion of Efficiency for a user and a task with respect to the number of clicks used until the objective of each completed task is achieved, with which it is possible to detect which tasks are the ones that take the most time to complete, and know the state of efficiency that the tasks have to fulfill the activities of the users.

- **Calculation Method**

  The Degree of Compliance will be equal to:

*CCTu = a la cantidad de clicks por un usuario*

*%CCT= NTCu/CTUp*

Where %CCT is the degree of relevance of the task to be carried out.

Rangos de Aceptabilidad:

$$0 \leq \%N_{CCT_P} \leq 45: no\ satisfactorio.$$

$$45 < \%N_{CCT_P} \leq 80 : marginal\ (regular).$$

$$80 < \%N_{CCT_P} \leq 100 : satisfactorio.$$

**1.3 Degree of Compliance Regarding Number Proportion of Times the user goes to help or FAQ (%P_NVA_P)**

Ratio of the Quality in use indicator with respect to the number of times that each user resorts to some help (%P_NVA_P) provided by the system to complete all the proposed tasks.

- **Objective**
  With this metric it is intended to know the proportion of Efficiency for a user and a task with respect to the level with which the system has to facilitate learning for users, this means is obtained by user manuals, in physical format as well as in digital format. , and thus know the level of Efficiency in order to learn how to perform a task in the best way.
- **Calculation Method**
  The Degree of Compliance will be equal to:

$$\% P\_NVA = P\_NVAu \times 100$$

Where P_NVAu is the average proportion of positive adjectives per individual.

$$0 \leq \%P_{NVA_P} \leq 45: \textit{no satisfactorio.}$$

$$45 < \%P_{NVA_P} \leq 80 : \textit{marginal (regular).}$$

$$80 < \%P_{NVA_P} \leq 100 : \textit{satisfactorio.}$$

Eficacia

2. Effectiveness

To test the Effectiveness of the process where routines can be scheduled, a couple of metrics will be considered:

**2.1. Degree of Compliance Regarding Proportion of Tasks completed**

Ratio of Completed Tasks for all Users, in this refers to the number of 'n' users performing 'i' tasks

- **Objective**

  With this metric it is intended to know, for a user and a task, what proportion of the task's objectives are completed correctly for all users of a certain profile, students and administrative directors, of the proportion of functionalities completed in relation to functionalities provided by the SUM.

- **Calculation Method**

  The metric is represented on a numerical scale, the ET will be better when it approaches 1.

$$Ptc = 1 - |\sum Ai\,|;\;\; 0 \leq \text{Ptc} \leq 1$$

  Where Ai is the weight assigned to the proportional part of the task not performed or performed incorrectly. In case the sum of the weights of Ai exceeds 1, the metric will be assigned the value 0.

- **The Degree of Compliance will be equal to:**

  Ptc x 100

  Where Ptc is the average of the rate of correctness Completed on proposed tasks for All users

Rangos de Aceptabilidad:

$$0 \leq \%P_{TC_P} \leq 45: \textit{no satisfactorio.}$$

$$45 < \%P_{TC_P} \leq 80 : \textit{marginal (regular).}$$

$$80 < \%P_{TC_P} \leq 100 : \textit{satisfactorio.}$$

3. Satisfaction

To evaluate satisfaction we will use a metric where the number of times the user expresses satisfaction or dissatisfaction will be measured and a survey where we will obtain information about the user experience

**3.1. Degree of Compliance Regarding the Proportion of the Number of Times that the User Expresses Satisfaction or Dissatisfaction with the system**

Proportion of the Quality indicator in use with respect to the Degree of Compliance with respect to User Satisfaction when assessing the integrated system counting all the proposed tasks.

- **Objective**

  With this metric it is intended to know the proportion of Efficiency for a user and a task with respect to the level that the system perceives in a productive way to carry out its activities.

- **Calculation Method**

  The Degree of Compliance will be equal to:

$$\%P_{NVS_P} = P_{NVS} x\ 2.5$$

  Where: P_NVS_P, is the value of the simple arithmetic average among all the users of the satisfaction that a user has.

Rangos de Aceptabilidad:

$$0 \leq \%P_{NVS_P} \leq 45: no\ satisfactorio.$$

$$45 < \%P_{NVS_P} \leq 80 : marginal\ (regular).$$

$$80 < \%P_{NVS_P} \leq 100 : satisfactorio.$$

**3.2 System Usability Scale**

- **Objective**

  The objective is to know the level of satisfaction that the user provides on the scale.

The users will be asked to score the questions using the following scale:

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| Totalmente en Desacuerdo | | | | Totalmente en Acuerdo |
|---|---|---|---|---|
| | | | | |
| 4 | 3 | 2 | 1 | 0 |

- **Questions**
    1. El sistema me resultó muy complejo
    2. El sistema me resulto facil de usar
    3. Necesitaría la ayuda de un experto para usar el sistema
    4. Las funciones del sistema están bien integradas
    5. Percibí que varias funciones del sistema estaban ausentes o no integradas
    6. Pienso que la mayoría de adolescentes en Yucatán  podrían aprender a usar el sistema rápidamente
    7. El sistema me resulta pesado y complicado al usar
    8. Me sentí confiado usando el sistema
    9. Necesité detenerme para aprender varias cosas antes de poder avanzar usando el sistema
- Template

  Diseño del Cuestionario de Satisfacción

## 7. Acceptance Levels

| | Satisfactory | Marginal | No satisfactory |
|---|---|---|---|
| 1.1 Ratio of completed tasks for all users | Over 80 | 45 - 80 | 0 - 45 |
| 2.1 Proportion of time taken to complete for all users | Over 80 | 45 - 80 | 0 - 45 |
| 2.2 Proportion of the number of clicks made to be able to comply with a completed task | Over 80 | 45 - 80 | 0 - 45 |
| 2.3 Quality in use indicator with respect to the number of times that each user resorts to some help | Over 80 | 45 - 80 | 0 - 45 |
| 3.1 Quality indicator in use with respect to the degree of compliance with respect to user satisfaction | Over 80 | 45 - 80 | 0 - 45 |
| 3.2 System Usability Scale | 0 - 1 | 2 - 3 | 4 |

## Resources

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https://www.nachomadrid.com/2020/01/metricas-de-usabilidad-y-experiencia-de-usuario/
https://medium.com/ux-ripley/c%C3%B3mo-medir-la-usabilidad-597c8fbb48f1
https://core.ac.uk/download/pdf/323348271.pdf