

GUIDE ON SOCIAL VALIDATION OF TECHNOLOGY



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(TECSOS)

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1

**Introduction
and
justification**



01. Introduction and justification

In 2022, the Social Technologies Foundation (TECSOS) celebrated its 20th anniversary since its creation. It has been twenty years in which the processes of social validation of technology have been one of the most important activities for the Foundation.

During these twenty years, validation or pilot processes have been carried out with a wide range of characteristics. From tests with a small scope involving a few users to large-scale pilots involving thousands. From national to international contexts. From different stages of technology maturity, testing models and functional prototypes to market-ready products. From case studies of a specific technology to piloting comprehensive services. From working with start-ups to international consortia with leading companies.

This guide aims to tackle the challenge of bringing together the learnings, successes, best practices, and of course, the failures and aspects to avoid from these 20 years of work in the field of **Social Technology Validation**.

02

Scope

02. Scope

This is an internal working document of the TECSOS Foundation, complemented by the Spanish Red Cross and Fundación Vodafone Spain Foundation and communicated publicly.

It is **internal** because it pretends to guide future validation processes of social technology carried out by TECSOS to confirm that experience is a degree, and nothing must be forgotten.

It is **complemented by the Spanish Red Cross and Vodafone Spain Foundation** because the social knowledge of the former and the technological one of the latter and they have put it at service of this guide.

This will also be **shared publicly** because sharing the acquired knowledge is also the main essence of TECSOS, and with the correct adaptations, this guide can be useful for other entities or social initiatives which are looking for a better life quality of vulnerable people through technology.

The goal of this guide is to be **practical, executive, and clear**. Every aspect has been considered to differentiate it from every other academic and theoretical document of every point developed. To theorize or standardize was not meant, but to guide action in the most pragmatic way.

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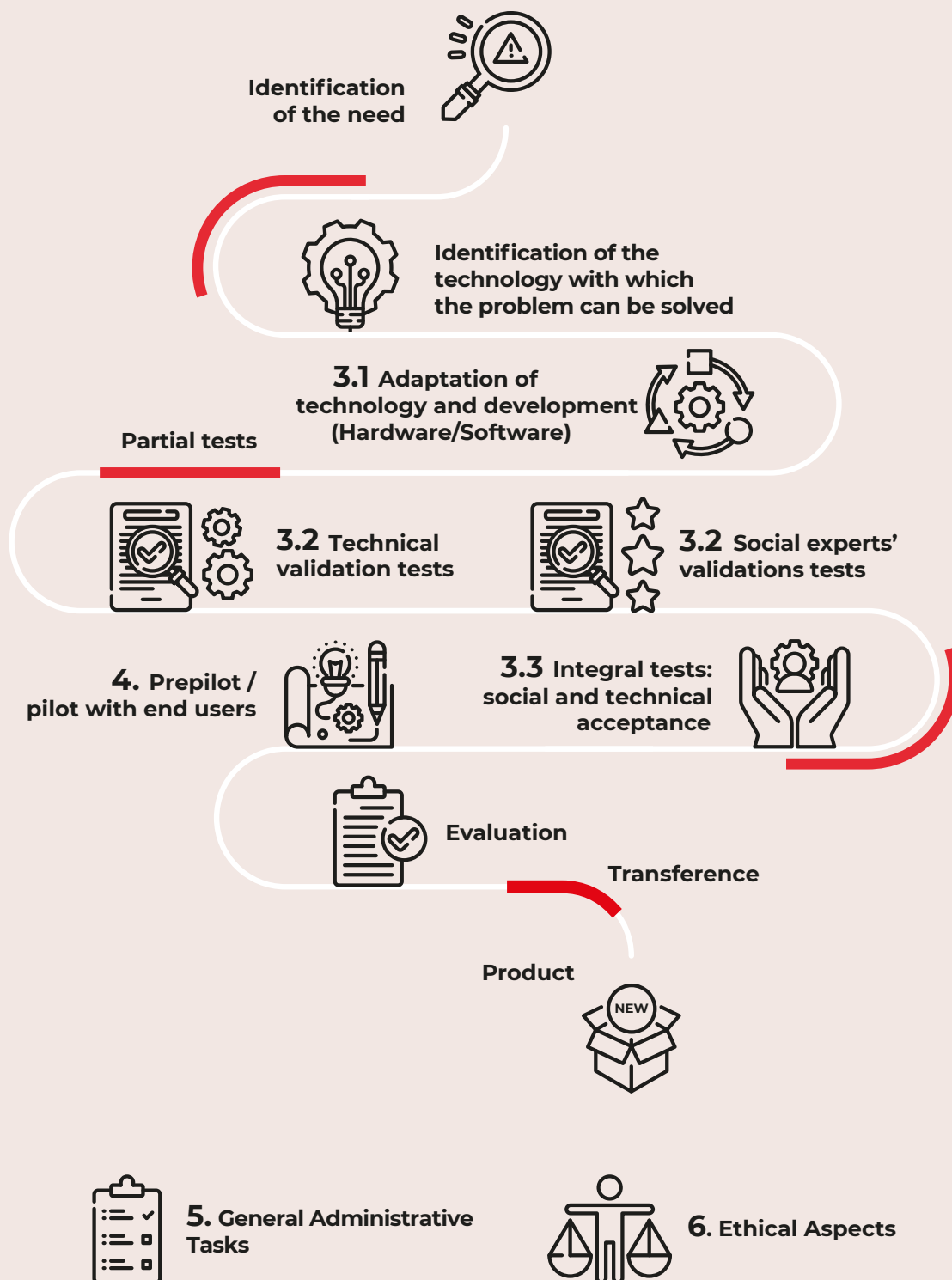
**Work
before
validation**

03. Work before validation

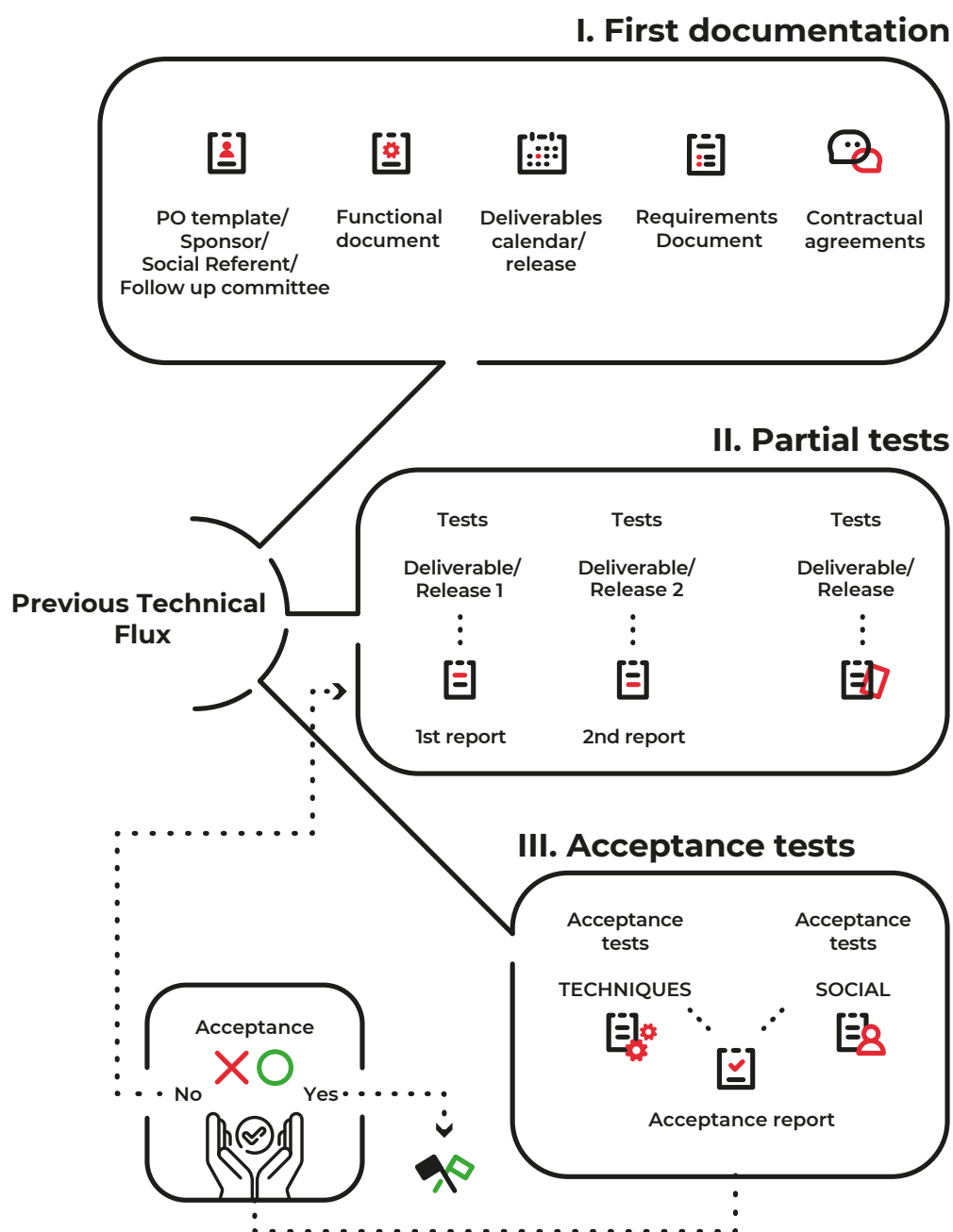
Throughout TECSOS history, most of the social validations of technology, particularly through pilot projects, have been the culmination of a process that has required tons of work and previous creativity, innovation, user-centered design, prospection, and development phases. There are huge variety and casuistic among all these previous processes and it makes it impossible to detail every single one in this document and would also fall outside of the scope of what has been defined above.

Hereafter will be detailed a schematic flux of the process before the social validation and, therefore, the one which makes the most impact on the success and quality of it: the development and materialization of the product and service to validate.

At this stage, the main objective is to make sure that the product or service gets the minimum standards of maturity, stability, and robustness for what it is scaled in the phase of social validation is the social impact and the enhance of potential future users' life. Being innovation the basis of every TECSOS project, it is not possible to guarantee at 100% of reliability (as it is inherent at the use of technology) that incidences and technical errors can't take place. This cannot be the focus of a process of social validation because all the efforts would be focused on trying to mitigate or solve them, as it could blur the results and we would lose the valorous information that users can provide.



TECSOS functionality in this phase is usually to accompany, test and technically validate that everything is being complimented the right way and that the product or service is correct for the next step of validation or pilot.



3.1

Starting documentation



3.1 Starting documentation

Owner Product Sheet (Product Owner, Sponsor, Social Referent, or Monitoring Committee)

This is the document that **details the key figure**, which corresponds to the person or group of people who provide social knowledge to the project. Ideally, this figure defines the need that the project aims to address and the objectives to be achieved. They accompany the project throughout the entire process and are responsible for implementing the result after the validation and transfer process.

It is important to note that the person or group of people assuming this role should be different from the person coordinating the validation.

Therefore, the document should define how all communication with this figure is articulated, including follow-up meetings, checkpoints, demos, etc.

Functional document

This document provides a clear and concise description of the different functions that the final product or service will have. It outlines what the product or service will do, how it will be designed, its components, and how the end user will interact with it.

The format and content of the document will depend on the nature of the project and the type of technology being used. However, it is important for it to be as detailed and clear as possible to avoid interpretation errors.

For example, in the case of an application or website, the document may include designs of different screens and the correlation between them.

In many cases, this document concludes a previous process of validating mock-ups or prototypes through contrast sessions or focus groups with potential users. It is important to emphasize the value of conducting such processes whenever it's possible.



This is how the client described it



This is how the project manager understood it



This is how the analyst designed it



This is how the programmer wrote it



This is how the marketer described it



What the client really needed

Requirements document

This document provides a detailed description of the operational requirements for the product or service.

It goes beyond the functional document by specifying essential starting requirements such as the number of users the solution should support, target cost, operating system, device specifications, technical limitations, and more.

Categorizing these requirements into functional categories or use cases is highly beneficial for subsequent tracking. It also helps facilitate clearer communication with the developer/manufacturer by assigning priorities or categorizing requirements as essential or desirable.

Deliverables calendar

This document outlines the specific deadlines and dates by which the technology partner (developer, manufacturer, etc.) commits to having the different parts of the product or service ready.

It defines the scheduling of the subsequent phases of the process, including partial testing and acceptance testing. It should be as realistic as possible, so it is advisable to include a margin for possible deviations if possible.

Contractual agreements

In preparation for product or service validation, it is necessary to define and agree on the support during validation (see "issue collection and correction

correction system" in section 4.1). While the definition of all this documentation is beyond the scope of this guide, based on experience, we recommend not waiting until the deployment to have the following points well defined and agreed upon during the initial phases:

- Timelines and terms of guarantees on the final product from the developer or manufacturer. It is advisable to agree on a support period and a warranty period to address any issues that may arise during validation.
- Maintenance costs upon project completion if it moves into deployment.
- Operational costs and agreements in the case of transitioning to a service: acquisition cost, usage license, ownership of the product or source code.

3.2

**Partial
testing**



3.2 Partial testing

These tests refer to laboratory validations that are conducted iteratively, according to the work schedule and based on the functional specifications document. The objective of this phase is to verify the progress of the developments, based on the deliverables and updates in the proposed product, and to identify any relevant deviations from the final deliverable at an early stage.

The procedure for conducting this validation, which depends on the type of hardware or software solution, focuses on verifying that the product performs as expected according to the established requirements. TECSOS has gained knowledge and expertise in this area of technical verification, enriched through the "Orientatech: your advisor for Social Technologies" project.

The participation of the social referent of the initiative is considered crucial at this stage, informing them of the execution and results of these tests. This action has two clear objectives: firstly, to always maintain a user perspective of the product, and secondly, to promote the leadership role of the social referent in the subsequent pilot stages.

It is important to document these tests in writing and inform the technology partner of the results so that any deviations from the agreed-upon documents can be corrected, if necessary.

33

**Acceptance
tests**

3.3 Acceptance tests

These are the final tests in which it is verified that the developed solution works from a technical point of view as expected and is also adapted and suitable for the context of the people who will use it. They mark the beginning of the social validation phase and close the development phase, hence their importance. They must meet the following criteria:

Comprise a technical perspective and a user perspective:

- Technical acceptance tests: Their objective is to validate compliance with the requirements document, functionalities, robustness, and reliability. It is advisable to involve individuals with technical knowledge to carry out these tests.
- Acceptance tests by social experts: These tests validate the overall solution from the user's perspective and its usefulness for which it was designed. Essential features such as usability and accessibility are assessed. It is recommended to involve individuals who are familiar with the user's needs to identify aspects

that may have been overlooked in the technical phase. For example, a solution may work technically, but if it is not usable for the end users, it is not a solution.

Be comprehensive: They should test and validate the entire product or service, considering each of its parts and their interrelation with the overall stability.

The testing environment should closely resemble a real environment (pre-production or pilot environment). It is crucial not to limit the testing to isolated laboratory tests but to replicate user behavior, making continuous use over several days (many errors

may occur after days of use) and in the intended context of use (e.g., if the solution is intended for installation at home, it is not sufficient to have it installed in the office).

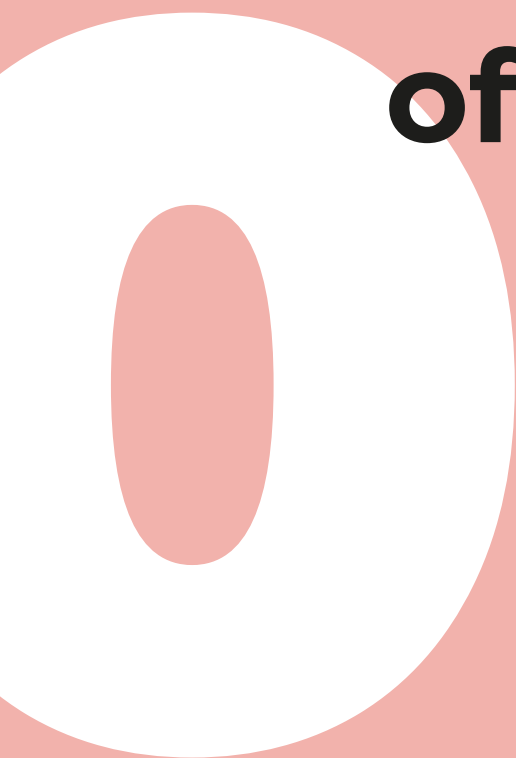
It is advisable to push the product or service to its limits through load testing, intensive usage, or checks for behavior in case of failures or unexpected events. However, there should be some flexibility when accepting or rejecting a development based on these types of tests.

The tests should be defined and agreed upon in advance by both the technological partner and the social stakeholders in terms of their form and expected results. Ideally, all project stakeholders should be present during their execution.

The tests are scheduled, and their completion is essential.

This phase is concluded with the acceptance certificate by the product owner or sponsor, and if the results do not meet the agreed criteria, a new phase for error correction and new acceptance tests (repeating the entire process) will be scheduled upon completion.

Phases of social validation of technology through pilots





04. Phases of social validation of technology through pilots

In this section, they will be described the most basic technical tasks that every social validation of technology or pilot must have the basic labors that are usual in these processes. For this reason, it is the most practical part of this guide, and it will be useful as a basic checklist with the aim of helping to dimension in time and resources this type of processes in the future.

It must be clarified that the next steps, tasks, or documents to be done do not have to follow a strict pathway because, in most of the cases, they can overlap, change the order or even be ready before the beginning of the process.

The beginning item of most of the tasks that we detail hereafter is a document. It is important to find the balance between not documenting the validation process and the excess of documentation with very long files that require a lot of time for their redaction, reading or complementation and they end because they are no valid.



4 1

Technical tasks of a pilot



4.1 Technical tasks of a pilot

Initial documents: These are the basic documents that define every social validation of technology process and that give an answer to what, how and who.

Pilot object (What): Defines what do we want to try about the product or service that are validated, which objectives they are following, which necessity pretends to solve, how is it going to enhance the life of users, etc.

Use case/s (How): it describes the trial scenarios, the actions, or activities that users are going to make through the product or service and how are they going to interact with it.

User profiles (Who): Defines the characteristics of the users. These may be demographic (age, gender...), social (survivors of gender-based violence, in a situation of loneliness, at risk of exclusion...) or other (with a degree and type of disability, with mild cognitive impairment...). To serve as a starting point for the user selection phase, it is also important to define the number of users required for validation. This number must be adequate for the results to be sufficiently conclusive and, if relevant, to consider the different casuistic of the profile (environment, social environment, etc.). different casuistry of the profile (rural and urban environment, men, and women, etc.).

Documents for users: These are the documents or processes that ensure the proper participation of user participants in validation with all guarantees. Within these documents, we find:

Participant form: This is where all personal and contact information that is considered useful for the pilot is collected.

Informed consent: This is a legally binding document that establishes the commitments of the parties involved. It informs the user participant about the purpose of the validation, what data will be collected, which entity will be responsible for safeguarding the data, which entities will have access and how, as well as any other information that we believe participants should be aware of, such as the possibility of withdrawing from the validation at any time. This document must be signed by the participants.

Training and manuals: This define how the training of the participant will be conducted, including dates and the inclusion of manuals and any support materials (such as video tutorials).

Installation/uninstallation and deployment protocol and training: This provides a detailed description of how the product or service will be installed, who will perform the installation, and, if training is required, how the process will be carried out, including the various materials to be used (manuals, tutorials, and/or video tutorials).

Support, monitoring, and/or accompaniment protocol and training: This provides a detailed description of how support, monitoring, and/or accompaniment will be provided, who will be responsible for it, the frequency, and, if training is required, how the process will be conducted, including the various materials to be used (manuals, tutorials, and/or video tutorials).

User selection: This establishes the timelines and responsibilities for finding user participants. It is closely related to the "user profiles" document. In the selection process, it must be ensured that the participants fully meet the required profile.

Data collection methodology/test plan: This defines how data will be collected (through data collection platforms, reports, interviews, etc.) and the frequency at which the data will be collected for subsequent analysis and evaluation of the validation process. In cases where user actions are required (such as simulating a fictitious teleassistance alarm), a test plan/calendar must be included and properly informed to the participants, as well as documented in the informed consent. It is useful to have online forms that allow the information to be digitized and shared for processing.

Incident collection and correction system (support): This describes how incidents related to the product or service will be collected and corrected. It is essential to establish this in a contractual agreement with the technology partner and to plan the procedure in case on-site visits are required. Incidents can be classified into different levels depending on the professional profile responsible for addressing them. It is also important to inform users about the channels to report these incidents (phone, email, etc.).

Evaluation (external/internal): This involves analyzing all the information derived from the validation/pilot activity to extract the results. In the case of internal evaluation, a logical approach can be followed: project objectives – expected results – indicators – verification sources. When the nature and budget of the project allow, it is highly recommended to involve an external entity to conduct the evaluation, as they can provide experience, objectivity, and reduce biases. Within this evaluation, it is interesting to gather feedback from participants about the validation process itself, such as whether the tests were mentally taxing or costly, if the provided information was clear enough, etc.

Formal closure: This provides details of the different activities to be carried out at the end of the validation process. These activities may include:

- Communicating the results to the entities involved in the process or the funding organization.
- Disseminating the completion of the project and summarizing the results through usual channels to society.
- Holding a closing event to express gratitude to the participating user participants.
- Initiating the transfer or implementation process.

05

**General
administrative
tasks**

5. General administrative tasks

Kick-off meeting: Initial meeting with all project participants where the following are presented or agreed upon:

- Participants, roles and representatives
- Project plan
- Project monitoring

Project plan. Tracking tool for validation, pilot, and overall the project, which includes tasks, time-lines and responsibilities. It is continuously updated and periodically communicated to the people involved. It can be a Gantt chart in Excel, Project, Mural, Trello, or any other similar tool.

Project monitoring. Planning the frequency and duration of monitoring meetings, as well as determining the necessary attendees. They can involve the entire consortium, if applicable, or be more internal (TECSOS + Central Office (CO) representatives + Territorial Offices (TO) representatives of the Red Cross). It is advisable to have a base presentation that outlines the activities requiring attention and their status (in progress, delayed, or yet to start), agreements, and points to be considered in order to maintain a historical record of the entire project accessible to all participants. Regarding the frequency and duration of these meetings, although it is flexible to adapt to the nature of each project, as a general recommendation, it is better to have short and frequent meetings rather than the opposite.

Risk analysis. A living document throughout the project that identifies potential risks or factors to consider and they can be left out of the rest of the documentation. To prioritize, they should be categorized by impact and urgency, and for ongoing monitoring, they should be associated with contingency plans or specific actions, with a designated person responsible for addressing them.

06

**Ethical
aspects**

People's rights and dignity

6.1



6.1 People's rights and dignity

In general terms, in every intervention with people, and concretely in a very special way in a social validation of technology process, it is essential a total respect of fundamental rights of people, their dignity and value. This includes the respect of privacy, confidentiality, auto-determination, and autonomy of participants.

It is also necessary to consider the ethical and psychological consequences for participants in these types of processes. Any foreseeable effect on their psychological well-being, health, or dignity must be considered and eliminated if deemed negative. In the event of an unforeseen but observed effect during the process, it should be documented in the results.

It is essential to make it clear to the participants that what is being tested is essentially "the technology" and not their abilities or qualifications. Therefore, if the scheduled tests cannot be carried out, it is always the responsibility of the product or service.

62

**Environmental
perspective**



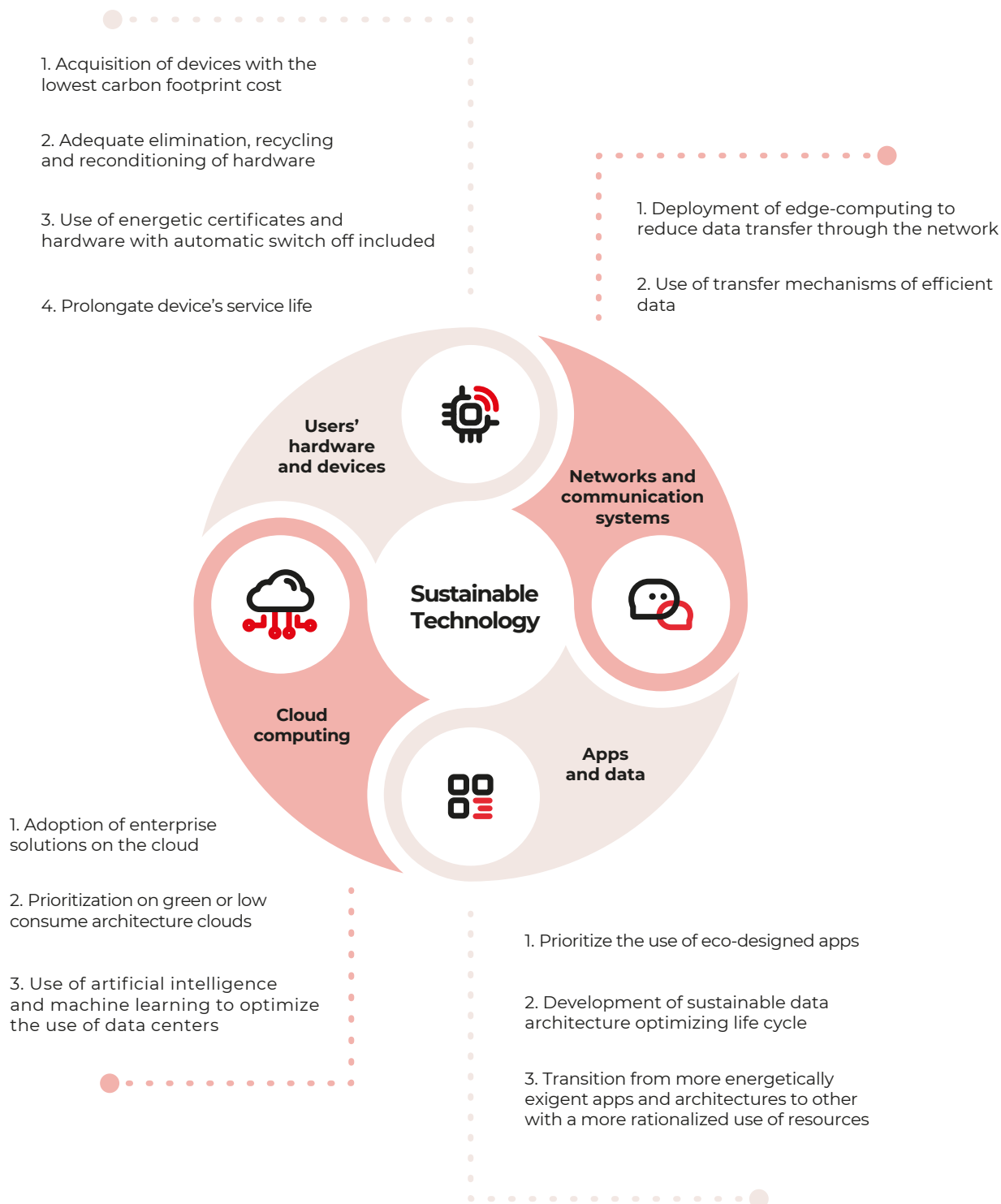
6.2 Environmental perspective

The design and development of actions within a TECSOS project (including the social validation part) should be guided by the principle of "Do No Significant Harm" (DNSH) to the environment.

In terms of technological validation processes, some general recommendations in this regard are:

- Collecting equipment at the end of the process and storing it without considering reuse or recycling is the greatest risk to avoid.
- Minimize personnel travel as much as possible by utilizing digital or telephone means for surveys, interviews, etc.
- Prioritize digital support over paper documentation.
- Incorporate energy efficiency criteria when selecting equipment to be used.
- When acquiring equipment, prioritize locally manufactured products or products certified with labels that ensure a positive impact on the planet (such as the B-Corp certification, which considers both a positive impact on the planet and on people).
- In general, consider any aspect that promotes a more sustainable use of energy, as detailed in the following graph.

Aspects to have into account for a sustainable technology



Gender perspective and diversity attendance

6.3

6.3 Gender perspective and diversity attendance

Gender perspective must be transversal to every social impact project in general terms, and moreover if the object population of a product or service is a woman collective, for example, related to gender violence (prevention, intervention, protection, or assistance).

There are various mechanisms to ensure the minimum compliance with this perspective:

- Incorporate the principle of gender equality when designing, implementing, and evaluating a technological product/service, considering the different real situations and needs of women and men.
- Ensure the participation of at least 50% women users in any technological validation. This percentage may be higher if it is considered that within the target population, women represent a higher risk of vulnerability. It is worth noting that in our pilot tests, there is most female participants since they generally show greater initiative and willingness to participate in pilots and testing of innovative technologies.
- All data extracted from a pilot should be disaggregated by gender.
- Analyze the differences found between male and female users to subsequently include them in the final conclusions and future work guidelines.

When we talk about attention to diversity, we mean being always aware of individual cultural differences, including those related to age, gender, race, ethnicity, nationality, religion, sexual orientation, disability, language, and socioeconomic status. Efforts will also be made to eliminate any biases based on these factors.

6.4

Volunteering in the validation process



6.4 volunteering in the validation process

Historically, TECSOS projects have been carried out in close collaboration with the Spanish Red Cross. As **volunteering** is a core and fundamental principle in all Red Cross activities, it is necessary to address this point explicitly.

Although the participating users in a validation process do so voluntarily, it is important to differentiate them from individuals who engage in regular and regulated volunteering activities within an organization. This point specifically focuses on the latter group.

At the beginning of a project, it is worth considering whether the assistance of volunteers is necessary for certain tasks, particularly those closely related to the users (e.g., accompaniment and follow-up tasks). In some cases, volunteers may already be involved in the program, in which case the answer may be self-evident. In other cases, an analysis of the situation is necessary to determine whether the incorporation of volunteers into the validation process is appropriate.

If the decision is made to involve volunteers in the process, the following points should be considered:

- Clearly define the role of volunteers, their dedication, and their involvement in the process.
- Design training programs, provide support materials, establish channels for consultation and follow-up.
- Gather their feedback for the final evaluation through interviews, surveys, or focus groups.
- Overall, consider their involvement throughout the process to ensure they feel supported in their work.





Participation of family members / carers of users

6.5




6.5 Participation of family members / carers of users

In many social technology validation processes, the role of family members, caregivers, or the close environment of the users is crucial. They are not only observers and indirect beneficiaries of the initiative but, in many cases, active users of the solution being validated. Therefore, it is necessary to make a distinction that is often key to the success of a project.

If active participation of caregivers/family members is required in the process to test one or more functionalities of the product or service being validated, they should be identified as users from the very beginning. They should be considered in all documents and processes (profiles, use cases, participant forms, etc.), as well as in the selection of participants in the pilot as a group. In these cases, it is important to note that the selection and analysis of results are done in pairs (direct beneficiary + caregiver/family member), so the involvement of both is necessary for proper validation.

If their role is more aligned with that of passive indirect beneficiaries, their participation in data collection tasks and evaluation of the pilot should be considered to gather their valuable input.



Management of emergencies



6.6 Management of emergencies

Throughout the history of TECSOS, the thematic area of projects that has been repeated the most, along with its consequent social validation, is related to teleassistance in its various modalities. As part of the social validation process, it is common to create a test schedule where users simulate an emergency by triggering a test alarm. However, considering the duration of some pilots and the vulnerability of these users, it is not impossible for a real emergency to occur where an alarm needs to be activated. In such cases, every effort will be made to handle the alarm through the usual channels and with the quality and promptness required by standards. However, since it is a system in testing, it cannot be guaranteed 100% that this will happen. Therefore:

- It is essential to clearly explain to the users participating in a pilot that the full functioning of the services is not guaranteed. This should be included in the informed consent document in a clear and understandable manner.
- On the other hand, false alarms can also occur (for example, triggered by home sensors), and these should be treated without exception according to the standard protocols designed for such cases.

6 7

Data protection and personal custody



6.7 Data protection and personal custody

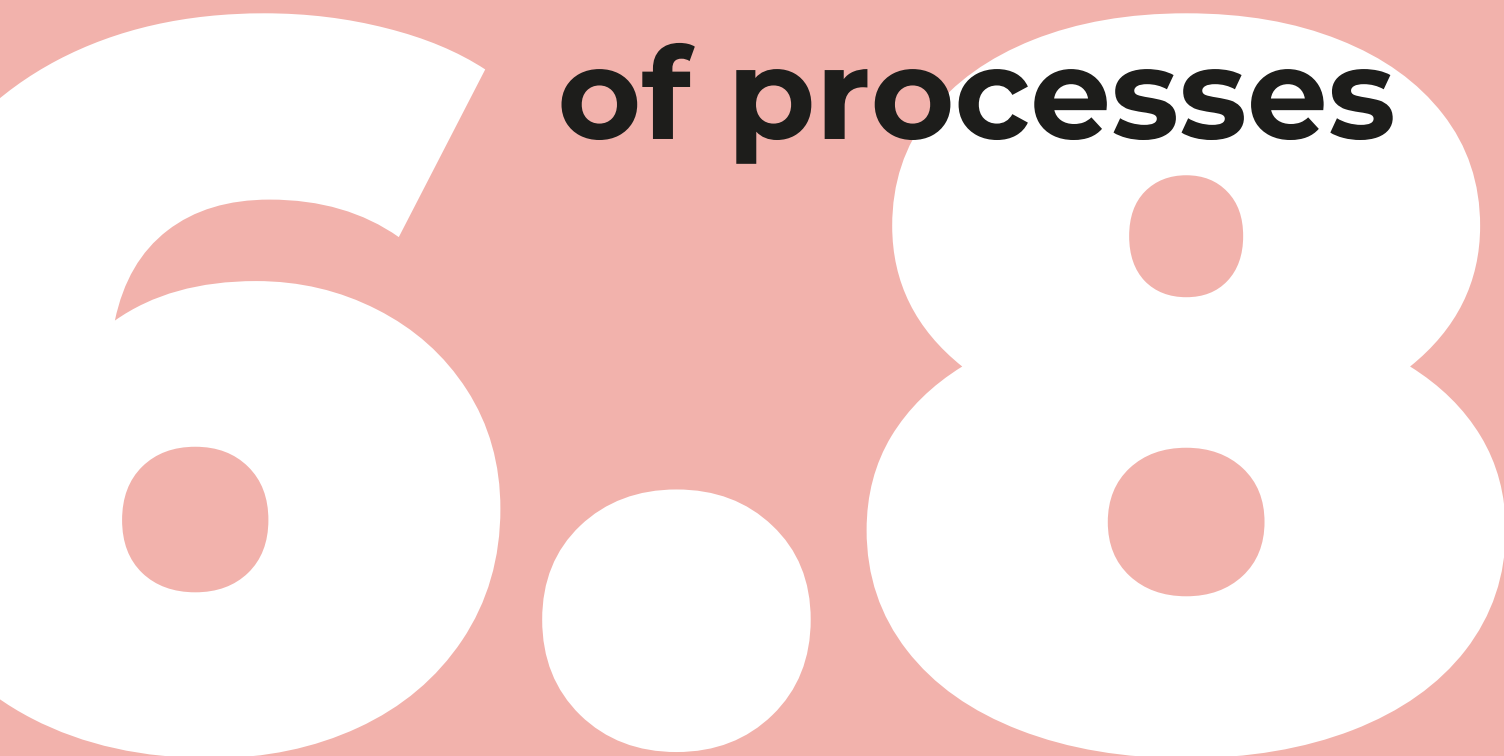
Considering that most of the data collected in a technology validation process is personal in nature, data protection is a crucial aspect to consider. The current legislation regarding this matter is the Organic Law 3/2018, of December 5, on the Protection of Personal Data and Guarantee of Digital Rights (LOPD-GDD).

In general, it is necessary to ensure that records storing personal information remain identifiable only for the strictly necessary time and within the controlled environment defined by the informed consent. Outside of that controlled environment, the data should always be anonymous or coded in a way that makes it impossible to associate with specific individuals.

Furthermore, all validation team members (e.g., monitoring personnel, installers, technology partners, etc.) should be informed about these principles and the need to guarantee the confidentiality of all collected personal information.

Regarding image rights, audio, video, or photographic recordings of the participating individuals should only be made with their explicit signed consent. This consent should cover both the recording itself and its subsequent public use. When it comes to sharing the recordings with participants, it is recommended, whenever possible, to distribute the spotlight evenly, aiming to avoid overburdening a single individual and making the project's diversity more representative.

Equipment/ services removal at the end of processes



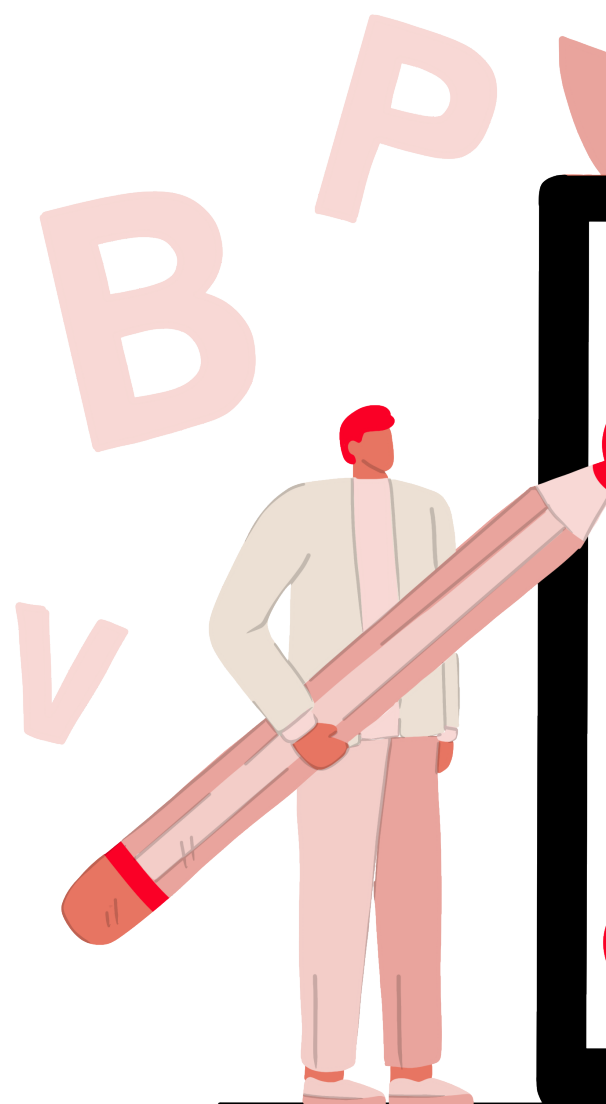


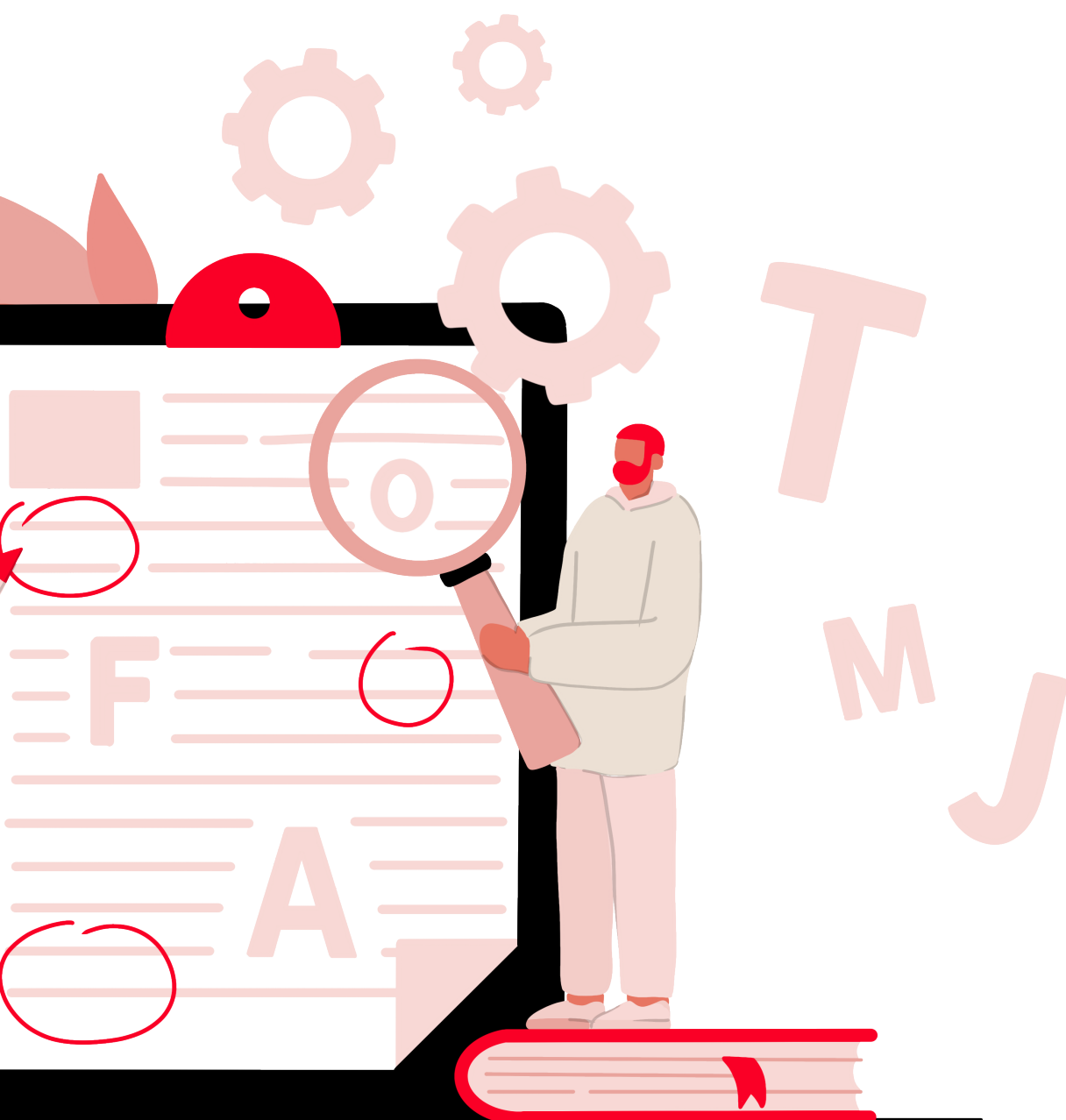
6.8 Equipment/ services removal at the end of processes

In most cases, it is usually a dilemma to retire from the user person that has been participating in the process of tech validation a equipment or service at the end of the process, particularly in the cases where the main result is the confirmation that the product or service makes an improvement in the life of the user. It is for this reason that some aspects must be considered:

- To inform the user from the beginning if at the end of the process the product or service will be removed.
- To include it in the informed consent in a clear and didactic way.
- To have clear and defined how the removal is going to be removed from the moment of the definition of validation.
- To design a respectful procedure of retirement/deinstallation.
- To include in this type of procedure all the information available for the user to have alternative ways of acquisition of the product/service such as service prices, data/voice tariff features offered by operators, acquisition methods, etc., and accompany the user throughout the process.

- In cases where the organization acquires equipment for the users, if the user expresses interest and can continue using it, the equipment will be donated. Similarly, if the equipment is owned by a project partner, efforts will be made to facilitate its donation, including it in the initial agreements.
- As a rule, when users express their explicit interest, efforts should be made to continue providing the service at the lowest possible cost.





The image features a large, stylized graphic of the numbers '6' and '9' in white, set against a solid pink background. The '6' is on the left and the '9' is on the right. The word 'Accessibility' is written in a bold, black, sans-serif font across the bottom of the numbers.

69 Accessibility



6.9 Accessibility

Accessibility and universal design criteria must be an essential requirement in any product and service, especially if they aim to improve the lives of vulnerable individuals. While not delving deep into these criteria as they are more focused on the design phase, it is worth mentioning in this guide the need to consider this aspect when validating a technological product or service through the following points:

- It is necessary to establish validation criteria, both technical and user-based, depending on the previously established design requirements that aim for the highest level of accessibility possible.
- Include individuals with disabilities to validate the specific aspects of accessibility in the pilot whenever possible. This becomes essential, particularly if the project's focus is on accessibility.
- Ensure that all user materials and documents (manuals, usage guides, informed consent, etc.) are made accessible.

**Most common
errors that
can end
in failure**

07



07. Most common errors that can end in failure

- Including excessive functionalities that are not the core focus during the functional definition and requirements phase. This disperses efforts, adds complexity, and prolongs timelines. It is recommended to divide the solution into smaller parts that can be validated, allowing for more manageable projects, shorter implementation times, and building and expanding upon solutions that are already in service.
- Conducting social validation tests with users without ensuring the robustness and reliability of the solution. This distorts the results and turns the tests into technical issue detection rather than testing social utility.
- Attempting to address multiple use cases in parallel, exponentially increasing the complexity of the process.
- Initiating the pilot test prematurely due to schedule constraints, exposing users and distorting the obtained results.
- Not having a designated owner, sponsor, or social reference who validates usability, accessibility, and everything related to the end-user. For example, a technological solution may meet all technical requirements but be stigmatizing for the end-user, rendering it invalid.

- Underestimating the effort involved in selecting pilot participants and agreeing to a higher number than can be realistically managed.
- Selecting participants for the pilot who do not fit the profile. For instance, if the profile is elderly individuals living alone and on multiple medications, selecting individuals who only meet the elderly criteria without considering the rest.
- Not properly considering the involvement of family members.
- Waiting until the end of the process to finalize exploitation agreements, which makes negotiations difficult and leads to unexpected maintenance or implementation costs that render the solution unsustainable.
- Failing to define the technical support procedure during the pilot phase.

tecsoS

FUNDACIÓN TECNOLOGÍAS SOCIALES

