TECHNICAL SPECIFICATIONS OF THE GERENCIA DE SERVICIOS SOCIALES DE CASTILLA Y LEÓN WHICH ARE TO GOVERN THE PROCUREMENT, THROUGH AN OPEN PROCEDURE WITH VARIOUS AWARD CRITERIA, OF TWO INNOVATIVE SOCIAL-HEALTH SOLUTIONS FOR ACTIVE AGEING AND INDEPENDENT LIVING, WITHIN THE FRAMEWORK OF THE PROCURA PROJECT, CO-FINANCED BY THE EUROPEAN COMMUNITY INITIATIVE INTERREG V-B SUDOE

Content

1. INTRODUCTION

1.1. PROCURA PROJECT

The contract to which this document refers concerns the procurement of two innovative social-health solutions for active ageing and independent living within the framework of the European project PROCURA.[1]

The object of the contract is divided into the two lots indicated below:

- Lot 1: Smart walker.

- Lot 2: Toilet equipped with technical aids.

The PROCURA project "Promotion of Innovative Public Procurement policies for digital transformation and the introduction of new technologies in social-health care in the field of active ageing and the promotion of personal autonomy", is 75% co-financed by the European Regional Development Fund (ERDF), through the Community initiative Interreg V-B SUDOE, in its second call.

1.2. IDENTIFICATION OF NEED

The PROCURA project has identified that ageing, increasing chronicity and dependency lead to an unsustainable situation in European care systems and generate significant pressure on welfare systems. In this context, the promotion of integrated models of social and health care provided by innovative technologies and services, resulting from the Results, Development and Innovation (RDI) activity of regional ecosystems, are a crucial element in achieving more efficient services.

The purpose of this document is to **define the technical prescriptions and functionalities to cover the need detected** in the framework of the PROCURA project through the development of innovative technical aids aimed at improving the autonomy of elderly persons or persons with disabilities, in order to enable a more independent, active and safe life.

The description of the functionalities detailed in this document, for each of the lots, comes from the following sources of information and activities:

1. The carrying out of previous co-creation workshops within the framework of the PROCURA project, which have served to identify the need.
2. The analysis of the technological and competitive surveillance document called "Technological and Competitive Surveillance" elaborated in the framework of the PROCURA project, which describes the state of the art on similar innovative developments carried out in the scope of each of the lots that make up the present contract.

[1] https://www.procura-project.com/

3. The **Preliminary Market Consultation** process carried out within the framework of the PROCURA project. This process was opened on 14 July and closed on 16 August 2019, the conclusions of which have served to identify the basic and additional functionalities in each lot.

1.3. NATURE AND OBJECT OF CONTRACT

This contract is considered as Public Procurement of Innovation (hereinafter PPI), as detailed in the Particular Administrative Clauses (hereinafter PAC).

The RDI activities under this PPI contract range from the exploration, design and development of a non-commercial prototype of an innovative solution aimed at covering the detected need, to the limited development of the minimum number of units to test the functionalities proposed in its tender by the successful tenderer in a real environment.

The RDI development of each of the lots must result in a **non-commercial prototype of an innovative solution that goes beyond the current state of the art**, bearing in mind that its orientation is to achieve a cost-efficient solution (in terms of production costs of the prototypes) so that, in a future development outside this contracting process, this solution can be **viable and affordable so that it can be acquired by potential end users**.

1.4. CO-DESIGN AND CO-PRODUCTION ACTIVITIES

The successful tenderer must bear in mind that, within the framework of the PROCURA project, a series of activities have been established, involving end users and experts organised by the project partners who are considered “Living Labs” (hereinafter LLs), in order to support the design and development of the innovative solution resulting from this contract.

This process is henceforth called co-creation/co-production[2] and seeks the involvement of the potential users of the solution from the beginning to the end of the development process in order to optimise the orientation of the development of the works of the successful tenderer in order to serve the identified need in the most optimal way possible.

For the correct execution of these tasks, it will be the responsibility of the successful tenderer to deliver the conceptual design and prototypes in the places where the test

[2] Co-creation activities: Foreseen during the development of the prototype, they seek, through the user experience, to provide feedback on the modules or units developed, the generation of evaluations and insights on the usability, utility, acceptance, improvements, likes-dislikes etc.
Co-production activities: Once the functional prototype is available, they intend, through the user experience, to evaluate the prototype in its final functionalities, with respect to the initially planned objectives and the evaluation of usability, acceptance, attitudes towards technology, satisfaction, etc. These activities also seek to generate valuations and insights with respect to the future improvements to be implemented and to the possibilities of evolution.

sessions are to be held, with the appropriate conditions and means to be able to carry out the corresponding tests. Below is the information regarding the tests to be carried out.

	Location	Dates	Description
Co-creation: 1st test	As determined by the 3 LLs: Autonom'Lab (Limoges, France); Intras Foundation (Valladolid, Spain); and Coimbra Hospital and University Centre, CHUC (Coimbra, Portugal).	It is planned to take place during the first fortnight of the fourth month of execution of the contract.	Testing of the conceptual design, through the collection of opinions from the participants (users and experts) and delivery of test results to the successful tenderer.
Co-creation: 2nd test		It is planned to take place during the first fortnight of the seventh month of execution of the contract.	Testing of the first prototype, through the collection of opinions of participants (users and experts) and delivery of test results to the successful tenderer.
Co-production: 3rd test		It is planned to be carried out during the first fortnight of the twelfth month of execution of the contract.	Testing of the final prototype, through the collection of opinions of participants (users and experts) and delivery of test results to the successful tenderer.

2. BASIC FUNCTIONALITIES

2.1. LOT 1: Smart walker

It will consist of the development of a non-commercial prototype of a smart walker, capable of approaching the user's position and preventing falls. The tenderer will describe the system they intend to develop in order to achieve these functionalities in their proposal.

The aim is to achieve a prototype of a versatile and multipurpose walker, with the possible integration of sensor technologies capable of offering other optional features.

It shall meet at least the following basic functional requirements:

- It shall include a call system for the walker to approach the user autonomously, which shall be designed to allow the walker to approach the position (angle, distance, etc.) most suitable for use at distances less than 10 metres from the user.

- It shall integrate a smart automatic braking system in the event of a fall due to a trip or an obstacle, and it shall also have stability characteristics capable of preventing the user from falling.
- It shall be adaptable in height. It will allow the adaptation for people whose height is between 1.40 and 1.90 metres.
- It shall be foldable and equipped with a simple drive mechanism.
- It shall have a sufficiently ergonomic and stable design for the user to be able to stand and sit, balancing support and posture.
- It shall incorporate a system that maintains the distance with the user automatically and provides some assistance in the movement, which shall be equivalent to the movement of the weight of the walker and with control of the movement through braking assistance. For this purpose, the system may use a set of sensors or other elements that are considered to be more technically appropriate.
- The call system can be achieved through a system with remote control, voice activation or any other solution that is considered more appropriate. In any case, if the solution requires an electrical system powered by a battery, which should be light and have a load duration of at least 24 hours. If operating through other technologies (bluetooth, etc.), the system should not require the user to have an Internet connection at home. The calling system shall not interfere with the use of other electronic devices.
- It shall remain operational in the event of battery depletion (if any) or unintentional deactivation of the support system by the user.
- Estimated useful life 5 years or more.
- Structure based on lightweight components. Lightness of the solution both in weight and size.
- Multi-language use system: users from different countries must be able to handle the solution developed.

2.2.LOT 2: Toilet equipped with technical aids

The aim is to develop a solution that can be modular and that provides the necessary technical aids to elderly persons in fragile situations, so that they can carry out the **task linked to the use of the toilet in an autonomous and risk-free way**. To this end, the solution to be developed shall meet the following basic functional requirements:

- The incorporation of the solution shall allow it to be connected to any type of toilet without any kind of work, neither plumbing nor electrical adaptations on the existing network.

- It shall allow the user to carry out the operation of sitting and getting up from the toilet in an assisted way, incorporating two support arms to facilitate the movement.
- The system that facilitates the aforementioned movement shall be protected with fairing to prevent accidents.
- In the sitting position, the solution should clean the person, taking into account the male or female anatomy in a single operation.
- It shall incorporate a drying system integrated into the solution itself.
- The whole system shall be operated by the user him/herself with commands that are simple and of large size, and with as few functions as possible. It will allow to differentiate the cleaning according to the use that has been made of toilet. It will allow the repetition of the functions of cleaning or drying, separately or together, when necessary.
- Once the operation is completed, it will have a self-cleaning mechanism of the toilet and the exposed part of the system. It will have a sensor to detect dirt and will incorporate an additional assisted cleaning mechanism.
- The temperature of the cleaning water and the user's drying solution can be regulated by the user.
- The elements that make up the solution shall be compatible with each other and must be connected to any existing toilet installed in any room.
- The useful use time must be equal to or greater than 5 years.

3. ADDITIONAL FUNCTIONALITIES

The following are some additional characteristics that the contracting body has identified, which could be incorporated into the solution to be developed, capable of providing the solution with more functionalities as well as greater capacity for personalisation, integration and combination with future developments that may be coupled to the system. In any case, as established in the PAC, the company may present its **Proposal for additional functionalities** in its offer, including these or others it deems appropriate.

3.1. LOT 1: Smart walker

- It will allow the storage of customizable user constants with the possibility of deleting and restarting.
- It can incorporate a seat for a weight up to 90 kg.
- A storage bag can be attached to the structure.

- Estimated additional useful time.

3.2.LOT 2: Toilet equipped with technical aids

- It will allow the storage of customizable user constants with the possibility of deleting and restarting.
- Two independent but compatible solutions can be provided for sitting and lifting support, as well as for washing and drying.
- Estimated additional useful time.

4. EXECUTION PLAN AND TIMELINE

For each lot, the tenderer shall organise their proposal according to the following phases and milestones.

The deliverables related to each phase are described in the following section.

4.1.PHASE 1 (P1): CONCEPTUAL DESIGN

The purpose of this phase is to develop a concept idea (hereinafter referred to as conceptual design) for the solution to be developed, which is in accordance with the identified need and which goes beyond the current state of the art.

Obligations: Elaboration and delivery of the conceptual design of the solution, which will be based on the analysis of requirements of the need identified by the contracting body and which have led to the definition of the basic and additional functionalities described in this document.

Milestones: This phase will end with Milestone 1 corresponding to the delivery of D2 “Conceptual Design” before the end of the third month from the formalisation of the contract.

Related deliverables: The deliverables related to this phase are D1 “Conceptual Design Test Questionnaire” and D2 “Conceptual Design”.

Hours of dedication (physical attendance) of successful tenderer: at least **8 hours of attendance** at the headquarters of the contracting body, to be devoted to the meetings the latter deems appropriate for the approval of matters such as task coordination, communication mechanisms, functionalities foreseen in RDI developments, etc.

4.2.PHASE 2 (P2): PROTOTYPE 1

The purpose of this phase is to improve the conceptual design in order to elaborate the first functional prototype, from the information gathered in the co-creation session that will take place with users and experts in order to test the conceptual design.

It is expected that the testing sessions in the three LLs and the provision of the corresponding results to the successful tenderer will take place in the first fortnight of the fourth month following the formalisation of the contract.

Obligations:

- The successful tenderer shall deliver the D3 "Integrated report on conceptual design test results" **within 7 calendar days** of making the results of the conceptual design tests available to the successful tenderer by the contracting body. Its conclusions should serve to guide the RDI development of the innovative solution to be achieved.
- The successful tenderer shall deliver a **first functional prototype containing all the basic functionalities described in this document before the end of the sixth month** following the formalisation of the contract. **At least 3 units of this prototype** will be delivered to the facilities determined by the three LLs with the appropriate conditions and means to carry out the corresponding tests.

Milestones: This phase will end with Milestone 2 corresponding to the delivery of the D5 "Prototype 1" before the end of the sixth month from the formalisation of the contract.

Related deliverables: The deliverables related to this phase are D3 "Integrated report on conceptual design test results", D4 "Proposal for a technical test questionnaire for prototype 1" and D5 "Prototype 1".

Hours of dedication (physical attendance) of successful tenderer: at least **4 hours of attendance** at the headquarters of the contracting body, to be devoted to meetings that the latter considers appropriate for the approval of matters such as the identification of the elements to be included in D3, presentation of D3 results, revision of technical and functional specifications of the solution, coordination of delivery of the prototype 1, etc.

4.3.PHASE 3 (P3): FINAL PROTOTYPE

The purpose of this phase is to improve the initial prototype until a definitive functional prototype is developed for subsequent final testing.

It is expected that the testing sessions in the three LLs and the provision of the corresponding results to the successful tenderer will take place in the first fortnight of the seventh month following the formalisation of the contract.

Obligations:

- The successful tenderer shall deliver D6 "Integrated test results report for prototype 1" **within 7 calendar days** of making the results of the Prototype 1 tests available to

the successful tenderer by the contracting authority. Its conclusions must serve to guide the RDI development of the definitive innovative solution to be achieved.

- The successful tenderer shall deliver a **final functional prototype containing all the functionalities proposed by the successful tenderer in its tender** and incorporating the relevant modifications and improvements in the light of the results of the tests carried out **before the end of the eleventh month** following the formalisation of the contract. **At least 3 units of this prototype** will be delivered to the facilities determined by the three LLs with the appropriate conditions and means to carry out the tests.

Milestones: This phase will end with Milestone 3 corresponding to the delivery of D8 "Final prototype" before the end of the eleventh month from the formalisation of the contract.

Related deliverables: The deliverables related to this phase are D6 "Integrated test results report for prototype 1", D7 "Proposal for a technical test questionnaire for final prototype" and D8 "Final prototype".

Hours of dedication (physical attendance) of successful tenderer: at least **4 hours of attendance** in the headquarters of the contracting body, to be devoted to meetings that the latter deems appropriate for the approval of matters such as the identification of the elements to be included in D6, presentation of results of D6, revision of technical and functional specifications of the solution, coordination of delivery of the final prototype, detail of the final tests, etc.

4.4.PHASE 4 (P4): FINAL REPORT

The purpose of this phase is to test the functionalities of the final prototype with respect to the initially proposed objectives, as well as to offer opinions and assessments, through user experience, regarding the future improvements to be implemented in the prototype and the possibilities of technical evolution to improve it.

To this end, once the final prototype is available, the co-production sessions will be carried out according to the methodology described in this document in order to test the prototype, through user and expert experience, in terms of usability, acceptance, attitudes towards the technology, satisfaction, etc. of its final functionalities, with respect to the initially planned objectives.

It is expected that the testing sessions in the three LLs and the provision of the corresponding results to the successful tenderer will take place in the first fortnight of the twelfth month following the formalisation of the contract.

The potential improvements identified will no longer be the object of the present contract, but will be considered as possible improvements to be implemented in the future and possibilities of evolution of the final prototype with a view to becoming a marketable product.

Obligations:

Once the testing sessions of the final prototype in the 3 LLs are carried out and the evaluations of the three countries are available, the successful tenderer shall deliver the D9 "Integrated test results report for final prototype" within 15 calendar days, under the terms and conditions established in this document.

Milestones: This phase will end with Milestone 4 corresponding to the delivery of D9 "Integrated test results report for final prototype" before the end of the twelfth month from the formalisation of the contract.

Related deliverables: D9 "Integrated test results report for final prototype".

Hours of dedication (physical attendance) of successful tenderer: at least **4 hours of attendance** at the headquarters of the contracting body, to be devoted to meetings that the latter deems appropriate for the approval of matters such as the orientation of the final report, etc.

5. DELIVERABLES

All texts that are part of the deliverables must be provided by the successful tenderer in **Spanish and English**.

The deliverables will be the following:

5.1. D1 "Proposal for a conceptual design technical test questionnaire"

It will consist of a document of technical aspects or dimensions to be explored by the three LLs in a first co-creation session. It will also include a form or system for reporting incidents or errors, if they can be identified in this phase.

These questionnaires will be designed in such a way that the participants can provide specific and relevant information from the technical and functional point of view on the design and technological components that the successful tenderer considers appropriate in order to optimally guide the co-design of the solution in the most appropriate terms and from the outset. Thus, the technical test questionnaires of this phase will contain all those questions that the successful tenderer considers appropriate to pose to the participants of the test sessions, which serve the purpose of making modifications and improvements in the requirements, design and development of the prototype.

D1 delivery date: The delivery period will be two and a half months from the formalisation of the contract.

5.2.D2 "Conceptual design"

It consists of a "proof of concept" or preliminary design of the system to be developed. It will contain all those elements necessary to begin the development of the prototype and must contemplate all the set of functionalities proposed by the successful tenderer.

This preliminary design will include the support that the winning tenderer considers appropriate (such as scale models, design schemes, demos or "live demo", clickable wireframe, etc.) to present the preliminary design and perform the tests in the first co-creation session by users and experts, including the description of the functionalities covered.

The successful tenderer must also provide a first version of the "user manual" or instructions describing the characteristics, functionalities and all the information required to carry out the tests.

D2 delivery date: Before the end of the third month from the formalisation of the contract.

5.3.D3 "Integrated report on conceptual design test results"

It will consist of a document that will be elaborated after the carrying out of the first co-creation session with users and experts in the three LLs and that will reflect:

- The integrated analysis of the test responses in the three countries, which will integrate the part on technical questions and other questions posed to the participants.
- Description of the modifications to be made in order to advance technical development.

D3 delivery date: Within 7 calendar days of the contracting body making the results of the conceptual design tests available to the successful tenderer.

5.4.D4 "Proposal for a technical test questionnaire for prototype 1"

It will consist of a document of technical aspects or dimensions to be explored by the three LLs in a test session so that users and experts can test all the functionalities of the first prototype and identify possible faults or errors in the solution if needed.

This proposal for a questionnaire on technical dimensions to be explored will be drawn up by the successful tenderer so that the participants can provide specific and relevant information from the technical and functional point of view on prototype 1, in order to make the appropriate modifications and improvements in the design and development of the prototype.

D4 delivery date: The delivery period will be five and a half months from the formalisation of the contract.

5.5.D5 "Prototype 1"

The successful tenderer shall provide at least 3 units of a preliminary functional prototype, each to be delivered to the premises of each of the three LLs.

Prototype 1 will already include all the functionalities proposed by the successful tenderer in its tender.

This first prototype will also be tested by experts and users in the three LLs (in the co-creation sessions mentioned in this document). To this end, the successful tenderer will provide the necessary means to carry out these tests, such as the corresponding version of the "user manual" or instructions.

D5 delivery date: Before the end of the sixth month from the formalisation of the contract.

5.6.D6 "Integrated test results report for prototype 1"

It will consist of a document that will be elaborated after the carrying out of the first co-creation session with users and experts in the three LLs and that will reflect:

- The integrated analysis of the test responses in the three countries, which will integrate the part on technical questions and other questions posed to the participants.
- Description of the modifications to be made in order to advance technical development.

D6 delivery date: Within 7 calendar days of the contracting body making the results of the Prototype 1 tests available to the successful tenderer.

5.7.D7 "Proposal for a technical test questionnaire for final prototype"

It will consist of a document of technical aspects or dimensions to be explored by the three LLs in a test session so that users and experts can test all the functionalities of the final prototype and identify possible faults or errors in the solution if needed.

This proposal for a questionnaire on technical dimensions to be explored will be drawn up by the successful tenderer so that the participants can provide specific and relevant technical and functional information on the final prototype, **in order to identify the appropriate modifications and future improvements that could be incorporated into the final prototype and reflected in the final report.**

D7 delivery date: The delivery period will be ten and a half months from the formalisation of the contract.

5.8. D8 "Final prototype"

The successful tenderer must provide at least 3 units of a final functional prototype, each to be delivered to the premises of each of the three LLs.

The final prototype will include all the functionalities proposed by the successful tenderer.

This final prototype will also be tested by experts and users in the three LLs (in the co-creation sessions mentioned in this document). For this purpose, the successful tenderer will provide the necessary means to carry out these tests, such as the corresponding version of the "user manual" or instructions.

D8 delivery date: Before the end of the eleventh month from the formalisation of the contract.

5.9. D9 "Integrated test results report for final prototype"

It will consist of a document that will be elaborated after the corresponding co-creation sessions with users and experts in the three LLs and that will reflect the comprehensive and integrated analysis of the responses of the tests in the three countries, indicating expressly:

- Description of the system components with indication of the standards used.
- Description of the level of RDI development carried out, with details of innovations incorporated and their level of proximity/remoteness to the market.
- Capacity of the developed solution to incorporate technological alternatives in the future (e.g. interoperability), variants and improvements (e.g. in terms of usability, ergonomics, user satisfaction, etc.) or functional extensions (future scalability).
- Description of auxiliary means necessary, where appropriate, for the proper use of the solution, including the training or capacity-building project deemed necessary and oriented towards the support staff involved in the management of the solution and/or the users themselves.
- Description of the most appropriate user target for the solution developed and calculation of possible final price to the user in a later development phase.
- Specifications on the maintenance foreseeably required in later stages in terms of duration, cleaning, support to problems of replacement of components.

D9 delivery date: Before the end of the twelfth month from the formalisation of the contract.