

# Public service as living lab

A new space for open and participatory experimentation in  
a real context (Citizen Shop of Aveiro)

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# 1. Framework and methodology

In order to develop an **experimentation programme**, a **living lab was set up** in a public service. **This programme had two distinct stages**. The first stage consisted of evolving and **testing prototypes related to face-to-face service** through constant interaction with citizens and public servants. The second stage was designed with the purpose of testing **technological solutions developed by the Public Administration**, whether they were in the final stage of development or already completed, identifying the barriers felt by citizens in their use. **The purpose was to verify the viability of the public service being used as a living lab regardless of whether the solutions to be tested were technological or not.**

Through this programme, there was a promotion of collaboration of citizens and public servants in the development of the solutions, thus establishing an **open and collaborative innovation mo-**

**del**. Therefore, **experts from the innovation ecosystem** were called to participate in this open, secure and transparent model to **provide technical support to LabX** in the design, development and evaluation of prototypes in real context. The living lab was set up in the Citizen Shop of Aveiro (LCA), a space where various public services are provided.

## Stage I: Face-to-face service

For this first stage, we started from the results of the research and the experimentation done during the project on face-to-face service in Citizen Shops (LC). From this starting point, we developed high-fidelity prototypes to improve citizens' experience in face-to-face public service delivery, involving them in an **iterative process that repeated the experimental cycle** (a repetition process of constant tests and improvements

while interacting with the solutions), **so that they would respond to the real needs of the citizens**. The experimentation and testing period lasted 4 weeks.

LabX designed an experimentation programme that included, in addition to the open participation of citizens and public servants, **the liaison with partners in the innovation ecosystem** who collaborated in the development of prototypes, monitoring and evaluation during the normal operation of the public service.

This stage was designed based on two parallel prototyping paths: the **evolution of prototypes** and the **ignition session for new solutions**. The evolution of prototypes consisted of **evolving low fidelity prototypes**, the separator panels, and the delimiting strips, to high fidelity versions, closer to a final solution, **to respond to the problem of lack of privacy in the face-to-face service**. On the other hand, the **ignition session** had

as a **starting point the problems**: the wayfinding inside the Citizen Shops and the user experience of the queue management machine. Instead of making prototypes, this **started with a collaborative session with design experts** for the construction of solutions through co-creation, which were later developed in real-world context during the experimentation stage.

## Stage II: Technological Solutions

For the second stage, the living lab was open to technological solutions from public entities **that were being developed or already completed, but not yet in operation, to be tested with citizens**. To this end, all public entities that were in a position to participate in this experimental space were challenged. Public entities would only have to

submit a prior request for collaboration, formalised through an application form developed for this purpose, so that in a subsequent stage, LabX could analyse the feasibility of the proposals.

Under LabX’s methodological leadership, public entities had the opportunity to experiment and test the solutions with citizens. In this context, they had the highly qualified assistance of an expert partner, from the scientific-technological system, who in close collabo-

ration with LabX designed the plan for monitoring and evaluation of the solutions subject to testing with citizens, thus allowing to provide robust and relevant information about the solutions under testing.

The **autenticação.gov portal was the technological solution eligible to be tested in the living lab**. This portal is the official website for the means of electronic identification, digital signature and secure authentication of the State.

## 2. What is a living lab?

A living lab, in contrast to a traditional lab, **operates in a real everyday context with an approach focused on citizens and businesses. It can be established in any central, regional or local government public service**, such as in a tax office, a land registry office, a citizen shop or even a municipal public service. Given its flexibility, it allows a wide range of contexts and dimensions. It can be designed to be itinerant, to have a short, extended or even permanent life span, as exemplified by some international<sup>1</sup> cases. Its purpose, objective and context define the limits, physical and organizational boundaries and lifetime.

**This collaborative approach of open innovation focused on the needs of citizens and companies, promotes the experimentation of solutions developed in a logic of triple-helix innovation**, where citizens, public entities and

the scientific system are present. The aim is testing solutions to problems that citizens and companies face when using public services in person or digital. Private entities (companies) can also be called upon to be present, thus becoming a quadruple-helix model. **A living lab also functions as an intermediary<sup>2</sup> that connects all parties involved, creating connections between all actors** (stakeholders), in a space where they are all at the same level for the development of a solution to a given problem.

The experimentation that takes place in a living lab environment has an intense contact dimension and develops as part of the daily routine of the normal functioning of a public service, where citizens and public servants are the main actors who bring value and influence the process of developing solutions. **It is not only about developing**

<sup>1</sup> Leminen et al. (2012). Living Labs as Open-Innovation Networks  
<sup>2</sup> M. Gascó. (2017). Living labs: implementing open innovation in the public sector

and testing the solutions with the citizens, but also testing them in the real context and environment of a public service<sup>3</sup> (and not in “pure” lab conditions), where the experts are also present. Furthermore, it can combine different prototype evolution processes, showing that the paths of experimentation are plural.

In this way, **the solutions developed in this context**, based on this approach, **provide an exceptional capital of confidence and reduce uncertainty because they are validated by citizens and public servants**, through the introduction of refinements and improvements in an iterative way to meet their needs fully.

<sup>3</sup> <https://ec.europa.eu/jrc/en/research-facility/living-labs-at-the-jrc>

In short, with the installation of the living lab in a face-to-face public service, it was intended:

- **to test the living lab concept itself**, installing it in a space that has face-to-face public services delivery;
- **to promote collaborative logics with citizens and public servants** of the entities present in the shop;
- **to submit to test solutions related to face-to-face service or technological solutions**, using the public services themselves as a research ground;
- to ensure and **promote the active involvement of partners in the innovation ecosystem**, taking advantage of this opportunity to develop and evaluate collaborative relationship models for experimentation spaces;
- **to measure and evaluate the performance of prototypes**, both in terms of user experience and service efficiency; using metrics, methods and tools that ensure transparency and robustness;
- **to gather learning to improve the tested solutions** through iterative and incremental developments, making available data on their performance and their interaction with citizens before implementation;
- to open a space that allows **testing with citizens not only the technical perfor-**

- mance but also the usability, accessibility and quality of technological solutions that were being developed or in the process of being tested by public entities;
- **to retain and disseminate the learning resulting from the experimentation process through Public Administration**, in order to promote a culture of experimentation and evaluation, to demystify unfounded fears and risk aversion, and to make available data that avoid always being “from scratch” for similar solutions.

### 3. Setting up a living lab in public services

Public Services, generally associated with negative ideas, such as bureaucratic and opaque procedures or crowded waiting rooms, **have the potential to**

**become a living lab**: an experimental space where public entities can test their innovative solutions with citizens in a specific context.

There are different aspects to take into consideration when setting up a living lab in a public service space:

#### The selection of the space

**The facilities to install the living lab are of added importance**, as it must have some characteristics favourable to experimentation and be suitable for the solutions to be tested. Bellow, we provide here useful indications resulting from this experiment:

- **Making exploratory and observation visits to the facilities of the public services previously**, where the living lab might be set up, to acknowledge in loco its characteristics, dynamics, limitations and positive points, which should be taken into account when selecting the place;
- Assuring that the services that host the living lab **have a space reserved and available to carry out individualized tests with citizens and public servants**, preferably next to waiting areas and service lines, and to hosting working meetings;

- **Providing alignment between the public body responsible for public space and the project;**
- **Involving and assuring the support of the local responsible person for the facility management in the experimentation initiative.** They have an essential role in liaising with the public servants working there and in supporting the management of risks associated with experimentation in a real and normally functioning environment;
- Acknowledging that public services provided in a given public space promote different demand profiles, of specific citizen profiles, for example, the demand in a Citizen Shop is different from the demand of a Registry Office or a council level service. **A greater number of public services provided will promote greater diversity in demand profiles;**
- **Choosing the location of the public space since it has an impact on the selection of partners to be involved in the project;**
- Considering, carefully, the choice of space, making a meticulous analysis of the pros and cons carried out. **Spaces with high demand for public services and very high waiting times**, which manifest themselves in full waiting rooms, **can be an obstacle to experimentation;**
- **Assuring the adequate Infrastructure and telecommunications requirements** to enable the installation and operation of technological solutions;

- **Recognizing that the solutions to be tested may not be ready or fully developed at the time of choosing the public service space.** To cope with this unpredictability, the choice should fall on a more flexible space, both in terms of infrastructure and space conditions. However, the lack of information should not be an obstacle to the choice of space.

## Identification of partners and experts

**After selecting the space and knowing the solutions to be developed and tested,** we have identified partners and experts, based on their characteristics and area of knowledge (expertise). The selection of partners and experts must be well thought out and must take into account:

- **the place where the living lab will be set up** (smaller cities and without universities may not have a given speciality that is sought to develop or evaluate a given solution, for example);
- **the starting point for the development of the solutions to be tested:** research; idea generation; proof of concept or low-fidelity prototypes;
- **the specificity of the solutions to be developed, technological or not, require different specialities;**
- the solution is fully developed, but not yet put into service and implemented, require only the process of monitoring and evaluation;

- if the solution to be tested is technological and digital (digital public service), such as a portal or mobile application, the **experimentation programme needs to include the fulfilment of accessibility and usability requirements<sup>4</sup>, if this is the objective of the entity proposing**, specifically, to carry out accessibility and usability tests also with citizens with special needs (physical, sensory or cognitive limitations).

## Involvement of partners and planning of activities

**The commitment of all stakeholders is crucial** so that the planning of the activities that take place in the living lab shall proceed as agreed. So, it must be taken into account that:

- **public entities that submit solutions to this methodology must be actively involved**, have the willingness to go into the field and participate in meetings to follow up the experimentation process: clarify doubts about the test solution; be involved in the test plan;

<sup>4</sup> [https://selo.usabilidade.gov.pt/Selo\\_de\\_Usabilidade\\_e\\_Acessibilidade\\_v1\\_1.pdf](https://selo.usabilidade.gov.pt/Selo_de_Usabilidade_e_Acessibilidade_v1_1.pdf)

- there must be a **kick-off meeting with the entities that submit the solutions to be tested**, where the experts may already be, to align expectations and objectives for the experimentation plan;
- **to hold meetings with the facility and the services management to agree on the most appropriate approach to set up the living lab, in a concerted manner.** Their knowledge of the space, the services and its dynamics is an added value so that the plan of experimentation takes place on the field without constraints;
- **assure the involvement of the staff of the entity that provides the space, where the public services take place, for the installation of the living lab starts from the moment the space is chosen.** It is essential to make the project plan known so that they are aware of the activities, objectives and role that they, as public servants, have in the living lab;
- **establish goals for the living lab and metrics for later evaluation of results.**



## 4. Test solutions related to face-to-face service

In this **first stage**, prototypes were **being optimised with contributions from citizens and public servants**, and simultaneously subject to mo-

nitoring and evaluation. With this starting point, two routes of experimentation were built, with different partners.

### 4.1 First route of prototyping: Evolution of prototypes

**Three separator panel models developed**, two of them based on the prototype design already tested by LabX and the third one designed by the team of specialists involved making use of the LabX field learning. Besides the separator panels, a **delimiting strip also developed** to evolve from the prototype already tested.

#### • Separator panels

This solution was developed with the purpose of increasing citizens' privacy during face-to-face service.

#### Main features:

- standard for acoustic insulation;
- allows communication between public servants;
- allows the passage of light to the workstations.



Photo 1 — Panel model A.



Photo 2 — Panel model B.



Photo 3 — Panel model B.

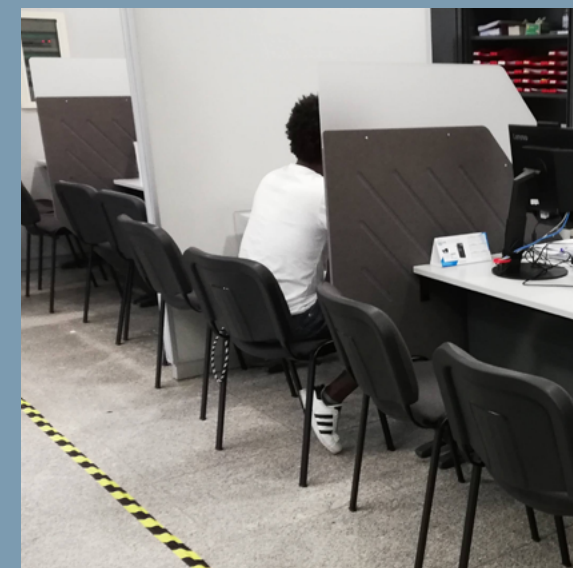


Photo 4 — Panel model C.

## Evaluation

We interviewed thirty citizens (ten for each panel model) and 15 public servants were interviewed during the trial period by applying questionnaire surveys. Also, ethnographic observation focused on the interaction of citizens and public servants with the different models was carried out.

Both the surveys and the ethnographic observation showed that the **separator panels guarantee an acoustic and**

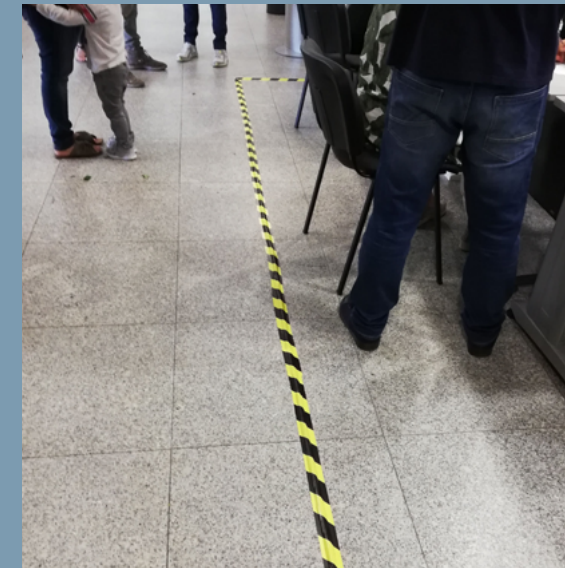
**visual separation during the service, contributing to the increase of privacy and concentration, both of citizens and public servants. With this solution, citizens feel more comfortable, respected and more able to approach their issues in a more reserved and confidential manner.** Of the three models tested, panel C was the one with the best functional and visual performance, and the preference of citizens and public servants.

### ● Delimiting strip

This solution aimed to create a reserved service area through the installation of a strip, which meaning refers to alert or warning, to enhance privacy and reduce interruptions during service.

#### Main features:

- Self-adhesive tape with a strong visual stimulus, yellow and black stripes intercalated diagonally, in PVC (polyvinyl chloride);
- It has a spongy base, less than 5mm high, which promotes tactile stimuli when stepped on.



Photos 5 and 6 — Delimiting strip at the service lines.

## Evaluation

After the installation of the strip, we have 10 citizens through the application of questionnaire surveys, and ethnographic observation focused on the interaction of citizens with the prototype.

**The citizens recognize the function of the strip, and its perception in the sto-**

re environment occurs quickly through the **double sensory stimulation**: vision and touch.

Through ethnographic observation, we have found that **people perceive the strip as a boundary that delimits the area reserved for the service.** However,

many times it is “violated” by citizens who approach the public servants, who are carrying out the service, to clarify doubts generated by the difficulties posed by the queue management machine and the current orientation system of the shop.

When questioned about the effectiveness of this solution, part of the public servants said that it would have little effect on the promotion of privacy. However, **it would delineate the attendance area which without the banners would**

**not be so evident, especially for those who were being attended or waiting for their turn.**

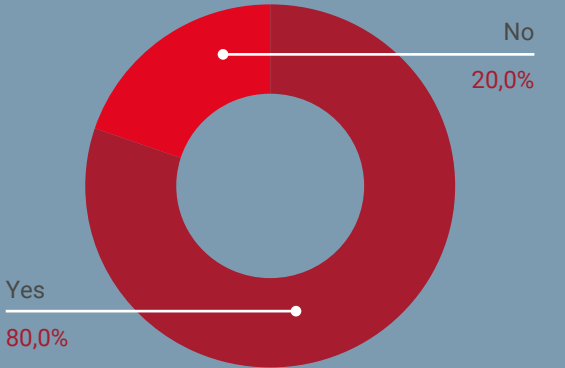
**Structural and space organization issues will also significantly affect the effectiveness of this solution**, such as: service lines flanked by narrow corridors/crossings; very close waiting areas; and small waiting areas.

The height of the strip’s relief (about 5mm) has proved adequate even for citizens with mobility limitations.

Did you notice the strips?



Do you know what is the strips?



Graphics 1 and 2 — Results of the surveys to the citizens.

## 4.2 Second route of prototyping: Ignition session for new solutions

Solutions for a new orientation system and an interface for the queue management machine were developed, based on the problem areas: disorientation in the shop and difficulty in using the queue management machine.

**The second route started in a one-day ignition session**, which **brought together several design experts** in two groups. Starting The session by presenting the problem areas that each group would work.. Afterward, **setting a visit to the Citizen Shop of Aveiro, getting to know the ecosystem where the problem areas reveal, on an exploratory expedition, to come into contact with the dynamics of the shop and observe in loco the difficulties experienced by citizens.**

In the afternoon, various activities took place, including **brainwriting to generate ideas and exercises to select the ideas with the highest potential**. With this capital, for a week, the groups worked on their ideas and developed the prototypes: **orientation system and queue management machine interface.**

During the testing period, the teams made the prototypes evolve at various times based on the results obtained through their constant interaction with citizens. To this end, we have carried an ethnographic observation on the direct relationship of the citizens with the prototypes, applying surveys, to citizens, public servants, the door supervisor and the employees from the shop’s Management Unit (MU). **During the development of the orientation system and queue management machine interface prototypes, we found that they were linked and influenced each other.** Due to this discovery, which only the field work provides, we have developed the prototypes in a symbiotic way, enhancing their efficiency.



● Orientation system

This solution aimed at mitigating the disorientation felt by citizens. Also, to reduce the challenges and barriers at the beginning of their journey in the shop.

Main features:

- Creation of three coloured-coded zones, to organise the shop, facilitate the understanding and communication of the locations of the entities: Zone 1 (red); Zone 2 (yellow); Zone 3 (green);
- Three directories were developed, one per zone, with the entities and their most wanted services, promoting a sorting before the interaction with the queue management machine;
- Each zone had a queue management machine associated, which only allowed the issue of tickets for entities in that zone. This option aimed to reduce the cognitive load of citizens in the selection of the service/entity sought;
- To increase the identity link between the machines and its colour zone, the machines were coated with the colour of the zone.



Photos 7 and 8 – Citizens and the orientation system.

Evaluation

During the evolution of this solution, we have registered **478 citizens interacting and experiencing the prototype**. With the information collected it was found that this prototype **increased the sense of orientation of citizens in the shop space**. This orientation system **transmits confidence to the citizens**. **It strengthens their autonomy, from the moment they enter the shop to the place of the entity that provides the**

**desired service**, reducing the requests for support to the door supervisor or the shop employees. The interconnection of this solution with the queue management machine, in a symbiotic relationship, **powers the orientation and improves the contact of the citizens with the queue management machine**, making it easier to select the appropriate ticket for the service sought.

● Queue management machine interface

We have developed two versions of this prototype: a version where the taxonomy was organised by **categories** and a version where it was organised by **services**. Both with the potential to support the citizens with the challenges they face when using the queue management machine of the Citizen Shops.

Main features:

In the Categories Version, we found a proposal with the following specifications::

- Services grouped by 4 categories: Citizen; House; Vehicle; Company.

- Directed to the categorization of services, since citizens seek services and not entities;
- Addition of an alert/notification button for citizens to be warned about alerts of various services, for example: closure of tickets of a given service, strike of an entity, etc.



Picture 1 — Categories Version.

In the Services Version, the specific features to be highlighted include::

- Connected to the Orientation System, replicating the information in the directories;
- The most sought after services by each entity are placed;
- The interface background colour matches to the colour of the area to which it is associated;
- The addition of an alert/notification button similar to the categories version.



Picture 2 — Services Version.

## 5. Technological solutions



Photos 9 and 10 — Citizens testing in its own support the two versions in the test zone.

### Evaluation

To monitor and evaluate the behaviour of prototypes, we have applied **surveys** (one for each version) **to 45 citizens**, and conducted guerilla interviews and ethnographic observation. We have challenged citizens, to try both versions, using a tablet, inviting them to act like someone (role playing) who was looking to withdraw a ticket to renew the Citizen Card or to renew the Driving License.

**The tested versions provide a better understanding of the process to be followed, unlike the experience provided by the current machine**, which creates doubts and uncertainties when issuing the ticket, increasing the possibility of issuing incorrect tickets and requesting for support of the door supervisor. In this way, we have achieved the purpose of developing a solution that was citizen-centred, easy to navigate and with better usability.

In the second stage of the living lab, in response to the challenge posed by LabX to public entities, **a solution was identified with the eligibility conditions** to be tested in this space and in the defined time window: **the autenticação.gov portal**.

The current autenticação.gov portal in service was the target of improvement and adaptation to the demands and needs of citizens and with new features. It was the new version of the portal, in the final development stage, that was tested in this space.

### 5.1 Tested solution: autenticação.gov portal

After the identification of the technology solution to be tested, **a test and monitoring plan was drawn up** to suit the solution. Subsequently, meetings were held to operationalize the plan with:

- the team of experts responsible for monitoring the technology, LabX, the team responsible for developing the portal and the Administrative Modernization Agency's digital experience team where the tasks to be assessed and which the citizens would have to carry out were defined;
- the Shop Management Unit and the shop employees to make known the activities that would take place there, their objective, clarify any doubts that might arise and make room for their contributions.

Main features:

The **autenticação.gov portal arose in view of the need to identify citizens on Internet websites**, being essential to ensure secure interactions between citizens or economic agents and the Public Administration. The portal allows the creation of the Digital Mobile Key (CMD) and associate professional and business attributes, which will allow citizens to authenticate themselves with the portals and Internet websites of different public entities and adhering private entities.

The test plan was developed in three stages:

A. Application of surveys prior to accessibility and usability tests

The application of surveys prior to the test had as purposes (i) to understand the scope of the **autenticação.gov portal** and intention of use and (ii) to enable the recruitment of citizens who have already used the portal, the CMD and / or demonstrated intention of use.

**We interviewed 41 citizens with no special needs** at the Citizen Shop, and **2 citizens with special needs** at the Professional Rehabilitation Centre of Gaia (CRPG).

B. Accessibility and usability Tests

We have designed the tests based on the evaluation of the portal’s accessibility and usability and the satisfaction reported by citizens while using it. After the application of the survey, **we have challenged the citizens**, who were in the shop waiting for their turn or have already been served, **to participate in voluntary accessibility and usability tests to the new portal, mediated by two experts. Seven citizens having answered positively.**

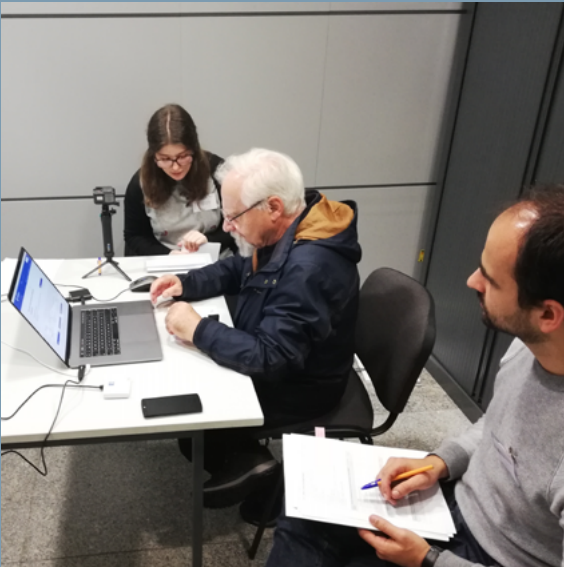
In order to ensure that people with special needs have equal access to the portals and websites of public bodies, **we have conducted tests with 2 citizens with physical limitations, who brought their experience and challenges to the evaluation of the portal.**

After contacts with some entities providing support to citizens with special needs, the CRPG made itself available to identify two citizens who attended the centre, with a similar degree and physical limitation, in order to carry out the accessibility and usability tests on a voluntary basis to the portal. **The citizens had severe limitations**



Photo 11 — Citizen performing the accessibility and usability test at the Citizen Shop of Aveiro.





**Photo 12** — Citizen performing the accessibility and usability test at the Citizen Shop of Aveiro.

**in the mobility of the hemibody on the left, with a degree of disability of 70%.**

In order to fulfill the requirements for a website or portal to obtain the gold seal of usability and accessibility, it is essential to select citizens with disabilities under the criteria defined by [selo.usabilidade.gov.pt](https://selo.usabilidade.gov.pt)<sup>5</sup>. That was not the case of this experimentation program.

**The test included the completion of four tasks**, defined during the closing of the test plan, which citizens had to perform: (1) activate the CMD; (2) authenticate with the CMD on the portal; (3) change the CMD PIN; (4) find information on how to download and install the software to sign with the CMD.

C. Heuristic evaluation

This task was developed during January and performed by accessibility and usability experts, based on a set of usability principles - the 10 heuristics of Jakob Nielsen<sup>6</sup>. The evaluation was performed individually by the three experts and aimed to analyse the pages and interfaces that the user uses during their journey through the

portal in order to verify and identify the usability problems, based on the set of defined usability principles.

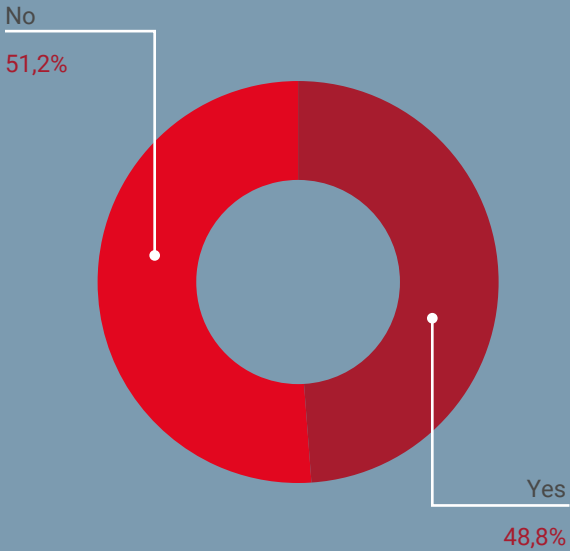
Evaluation

From the analysis of the surveys, it is clear that of the 43 citizens interviewed, **only 37% knew about the autenticação.gov portal** and that the CMD is better known than the portal that activates or creates it.

**The tasks that presented the most errors** during their execution by the citizens, and therefore with the most difficulty to be accomplished successfully, were **tasks 3 and 4**. The errors that occurred in these tasks **showed that the organisation of the portal is not clear enough for citizens to know what to do in order to accomplish the most appropriate and efficient way to complete the tasks**. It should be noted that all citizens carried out the tasks, with greater

or lesser difficulty, that were requested in the scope of the accessibility and usability tests.

Do you know what the Digital Mobile Key (CMD) is?



**Graphic 5** — Knowledge about CMD.

<sup>5</sup> <https://selo.usabilidade.gov.pt/sobre.htm>.  
<sup>6</sup> Nielsen, J. (1994a). Enhancing the explanatory power of usability heuristics. Proc. ACM CHI'94 Conf. (Boston, MA, April 24-28), 152-158.



## 6. The 13 main reasons

Through the heuristic analysis, using the severity scale of the problems with 3 categories, **there were 29 problems**, 17 of minor category and **12 of important category** and none in the catastrophic category. There were 10 bugs, 5 of minor category and 5 of major category. These are problems that pose obstacles and challenges for citizens when using the service provided by the portal and need to be corrected to ensure a positive and satisfactory experience for those seeking the portal.

After the accessibility and usability tests were carried out, surveys were applied

to measure the satisfaction of the 9 citizens with the portal, considering the experience of the tests. The citizens revealed that they consider the portal useful for their daily life. However, from their perspective, the quality of the interface and the quality of the information present some limitations that create barriers and waste of time in completing the tasks.

**These results were used to inform the optimizations and improvements to which the solution was subjected before being put at the service of the citizens.**

Throughout this experimentation programme developed, in two distinct stages, solutions related to face-to-face public services were tested and developed in the first stage, and we have tested a technological solution related to digital public services in the second

stage. With this methodology, we can accumulate a vast amount of knowledge that can serve other teams and other public entities to have an advanced platform from which they can start to solve the challenges they face.

From here, we highlight the following learning:

1. Promotes the contribution of citizens and public servants in the evolution of solutions, **participating, constantly and inclusively, in the redesign process itself** of previously thought out solutions;
2. Bringing to the problem space partners specialized in designing solutions and developing prototypes, enables and powers the process of experimentation. From the outset, **it adds technical capacity in identifying and introducing rapid improvements** to prototypes and their sustainability;
3. Prototypes tested initially in other contexts can be evolved, or prototypes can be developed directly from challenges raised in research processes. This living lab has shown that this **flexibility exists in developing solutions through distinct prototyping paths**;

- 4. It allows **testing in a holistic and integrated way a wide range of prototypes** and thereby revealing unobserved links in the research and co-creation stages. Isolated testing of prototypes in solitary does not reveal connections between them;
- 5. **Allows the identification of other factors that may affect the effectiveness of a solution**, for example the architectural conditions in the case of delimiting strips;
- 6. The solutions tested have created a dense learning capital, providing **indispensable clues for future decision making related to the improvement of both face-to-face and digital services**;
- 7. It is possible to set up a living lab in any space that provides public services, either in a citizen shop like here, or in any other public service. It is **adaptable to the conditions and dynamics of the different spaces where public services are provided**;
- 8. **Power the proximity, connection and collaboration between the various actors involved in the process of experimentation**, with all these relationships occurring while public services are provided to the citizen. Citizens and public servants are on the same level as experts who materialize prototypes and evaluate them during the experimentation process;
- 9. The body of knowledge generated during this stage does not end in the tested solutions. It goes much further as it **guarantees “spill-over” effects**, as it can be

shared and transferred among the actors involved, broadening the boundaries and horizons in the areas of knowledge in which this project has moved. It is knowledge **made available to society as a whole so that others can continue to advance with it or develop new questions**, be it associated with a project arising from it or even informing other projects;

- 10. At the end of these interventions, we are thus able to contribute not only to the improvement of public services in the strict sense, but also to **cause delayed and increased effects among the innovation ecosystem**. The tested solutions and, above all, the approach used in their incremental development contributes to energizing relationships between partners of this innovation ecosystem, providing them with new formats of collaboration and ensuring the sharing of learning and knowledge.
- 11. **The living lab has proved to be a transparent and open space for the participation of citizens and public servants**, also allowing all public and private entities present in the shop to follow and get involved, with the mediation of the experts, in the development of the solutions submitted for testing. **Both citizens and public servants, in a transparent and open context, participate and contribute their experience and knowledge to the solutions, doing so in an active, spontaneous and voluntary way.**
- 12. In this sense, setting up a living lab in a public service, taking advantage of the diversity of citizens who visit it, allows the creation of a **single space to give a voice**

## 7. Partners in the innovation ecosystem

**to all citizens**, regardless of social strata, nationality or any other criteria, including citizens with special needs. **No one is left behind, and everyone can contribute and influence decisions on the solutions that will affect them when putting into service. It is a space par excellence for social inclusion and citizen participation.**

13. **The objective of the adoption and development of a technology eminently involves the optimisation of public services, placing itself at the service of citizens to improve their experience in contact with the state and bring more value to society - and it is not an end in itself.** Therefore, if they are not tested with citizens in a real-world context before being implemented at scale, public services may introduce new challenges and barriers instead of solving them. Challenges and barriers that, without timely testing, might only become known once implemented, therefore, too late to minimise uncertainty and control risks. **It is the technologies that have to adapt to citizens and not the other way around.** The learning obtained **can inform the optimisations and improvements that these have to suffer before they are made available to citizens and companies.**

One of the objectives of this project was to promote collaboration with actors of the national innovation ecosystem by involving them in the experimentation programme. These partnerships added technical capacity and knowledge both in the development of prototypes and in their monitoring and evaluation. The identification and selection of expert partners took into account the solutions to be developed and tested in the experimentation programme (their state of evolution) and the location of the living lab.

### Projectlabbb

It was involved in the first stage of the project and has developed and monitored the prototypes related to face-to-face service: the separator panels and the delimiting strip. It is the equipment design lab of the Faculty of Fine Arts of the University of Lisbon. Composed of a set of resources oriented to support the different phases of the project, research and development in design, namely products and equipment, from the first sketches and studies to the final proposal, including prototyping and validation.

**b**  
**a** **belas-artes**  
**ulisboa**

Design Factory Aveiro

It was involved in the first stage of the project and has developed and monitored the prototypes related to the face-to-face service: the orientation system and the queue management machine interface.

The Design Factory Aveiro assumes itself as a dynamic and facilitating platform for the exploration of methodological practices, tools and processes of participatory design. It functions as a space for collaboration and knowledge sharing in the development and materialisation of innovative products and services led by Design.



Fraunhofer Portugal

It was involved in the second stage of the project, having monitored the technological solution: the autenticação.gov portal.

The Fraunhofer Portugal Research Association (Fraunhofer Portugal) is a private non-profit association founded by Fraunhofer-Gesellschaft, the largest applied research organisation in Europe. It has consolidated competences in the areas of human-centred design, artificial intelligence and cyber-physical systems.



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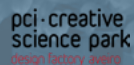
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