LABORATÓRIO DE EXPERIMENTAÇÃO DA ADMINISTRAÇÃO PÚBLICA

ADMINISTRATIVE MODERNIZATION AGENCY

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Index

Opening

More than numbers:
using empirical data to inform innovation strategies

Nowadays, data is announced as the raw material for the transformation of the management and delivery of public service. However, we have seen that the Pantagruelian accumulation of data raises new and unexpected challenges (transparency, personal rights protection, new risks of information manipulation, etc.). More and more it is urgent to question the gap between the raw data streaming within the State and their effective uses to improve the performance of public organization and in materializing public policies. Data can be more than illustrations.

The experimental project «InovX: Innovation Panel for Public Sector» had the double goal. First, it intended to obtain a diagnosis of the innovation strategies used in the Portuguese Public Administration. At the same time, it aimed at building a prototype for a navigation tool based in empirical data, which supported the decision-making processes in public organizations. For the diagnosis, we wished for the development of a model for the measurement and monitoring of innovation not only aligned with the specificities of public sector, certainly different from the private sector logics, but also taking into consideration the historical formation of the Portuguese State in terms of guiding principles and governance mechanisms (distinct from other welfare state models). Models that are insensitive to their context are of little use. For its part, the navigation tool wanted to present data in order to satisfy the needs of its potential users, especially public managers and decision-makers, besides experts on the subject. More than the sophistication, we wanted an operational way to make those data accessible, actionable and relevant for the decision-making context regarding the innovation strategies.

As a matter of fact, those are rather modest goals: we wanted to apply what is being repeatedly said about innovation measurement and data use in the public sector. The ideological consensus around the importance of innovation, its measurement and evaluation, is not always translated into demonstrative, practical examples. For that purpose, it is important to profit from an experimentation approach. Opening a safe space to test an innovative solution, at a controlled and limited scale, makes possible for mapping the risks in a timely way, reducing the negative consequences in the implementation to come and, finally, reusing the lessons learned during that short-term intervention (including the more than probable «errors» arising meanwhile). Here, the experimentation meant a squared evaluation, so to speak: the use of self-reflection devices and procedures enabled that we are submitted to the very same requirements of rigor and inspection that we placed upon the Public administration in its whole. The experimentation highlights, besides, that the results obtained are never definitive and closed, always waiting for the next iteration that will overcome and fine-tune them.
The measurement can be more than an exercise that exhausts itself in its own intricacies, or a consecration ceremony that celebrates a deserving ambition. For that very reasons, we wanted the deliverables obtained in this experimental project, both the diagnosis and the navigation tool, to act as change inducers. Albeit in its «larval stage», these resources can impel a driver for change – and not only an inspirational rhetoric. Public organizations can have now strong anchors for their own transformation.

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Meaningful measurement and public innovation

The Observatory of Public Sector Innovation (OPSI) was established in 2013 with the aim to facilitate learning on public sector innovation across OECD countries. Since then, OPSI has been collecting innovation cases across the world, analysing innovation trends and supporting governments in their innovation efforts. Among these, public sector innovation measurement has been a concurring topic that OPSI has been continuously analysing and advising countries on.

While public sector is often considered sluggish and adverse to change, innovation efforts are ongoing and through measurement, we can go beyond anecdotal evidence and bust many prevailing myths and stereotypes. Hence, measurement systems serve as descriptive tools, feedback measures, needs assessment and alarms for the need of further control and evaluation.

Yet, public sector innovation measurement is not an easy topic: as part of the Oslo Manual, the OECD has led the discussion around innovation measurement, yet, a uniform standard for public sector innovation measurement has not emerged. Most measurement efforts have been survey-based, based on theoretical assumptions from the private sector and often not repeated (although Denmark is leading the way with the InnoBarometer in collecting data over different time points). This has given limited information on how public sector innovation develops over time and how the needs, capacities and resources for the latter change. Different types of innovations – adaption, missions, enhancement, and anticipation – need varying support and conditions and thus, uniformity of measurement systems may be actually hurting specific innovation efforts. In addition, the «positive» prism of innovation is still prevalent in the public sector – innovation is seen as something that is always beneficial. This assumption should be refuted, because it stands in the way of meaningful measurement systems that act in a sentinel manner. Consequently, in public sector innovation measurement there are serious trade-offs between generalisability, comparability and uniformity versus usefulness of measurement towards different types of innovation and user needs.

There is a clear need to link public sector innovation measurement better with its different purposes and user needs; so, that «why» measure public sector innovation does not get lost in «what» can be measured. Meaningful measurement is purposeful. Public sector innovation measurement should demonstrate that right action and direction has been taken, thus, creating legitimacy into the process; provide general descriptions about the phenomenon at hand and direct feedback about the success of tested measures to those who are implementing policies or making strategic decisions around public sector innovation.

Regarding many of the above points, the InovX goes beyond standard measurement efforts. The team behind the work has developed a public sector specific theory of change based on the innovation life-cycle model developed by the OECD. How the collected data is going to be used and by whom, has been taken into account from the get go. The survey and the concepts used underwent rigorous cognitive testing and the needs of the data users were identified in a collaborative manner. There is plenty to learn on how InovX has been developed and more so, on how it is going to be used in practice.

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Public innovation: promoting the dialogue between research and action

The last decades have seen an intense academic and political debate regarding the role of the State and on how it fulfills its mission. Consequently, there has been a significant effort to rethink its organization and performance, as well as an increase in the implementation of such possibilities. It is therefore very important to map the effort and potential for innovation that has been developed by public sector's entities in Portugal. The relevance of this assessment is not only important to take stock, but also to overcome persistent outdated visions of public administration, which is nowadays very different from what is usually portrayed.

The public sector is a difficult subject for such a type of project. Firstly, because its entities constitute a vast landscape, with a significant diversity among them and with a very broad scope. Secondly, the *modus operandi* of these institutions can hinder innovative behavior, since it requires some risk-taking that these institutions are not always used to adopt. Nonetheless, these arguments reinforce the necessity of this project.

The model that was developed for this study – labelled innovation cycle – awards an important role to the collaborative behavior that the public sector entities should have in their innovation processes. On the one hand, this should account for collaborations between these entities; and, on the other hand, to the collaborations between those entities and the national scientific system. This collaborative role emerges explicitly in the model, being grounded in international research on the topic. This aspect will be particularly important in the future, to stimulate and consolidate the innovative capacity of public administration. Monitoring the contextual aspects of innovation, the institutional behavior towards innovation, and its outputs (all of these based in empirical data and supported by the abovementioned theoretical model), will provide policymakers important information regarding the innovative capacity of their institutions. Moreover, it will signal emerging challenges ahead in reaching for that goal. For the research team of CIPES – The Centre for Research on Higher Education Policies, participating on the development of InovX was an important opportunity to make an exploratory exercise mapping innovation in the public sector. This collaboration allowed us to combine our scientific knowledge in the field of creating performance indicators and in the field of innovation and public management with the possibility of diffusing a much-needed innovative behavior in the public sector. Thus, we truly wish that the path now initiated may be pursued further in order to promote a better public sector, with its role better appreciated by the society it aims to serve.

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A. Reasons

In order to meet the present challenges and proactively prepare the future of Public Administration, a rigorous and robust knowledge of current innovation practices is indispensable, safeguarding an understanding of the specificities of public service guaranteed by the State. The experimental project entitled "InovX: Public Sector Innovation Panel" aimed at developing a prototype of an instrument for monitoring innovation strategies that was adapted and could be applied to the context of the Portuguese public sector. We can then begin by highlighting the three main reasons for this experimental project:

- **Getting empirical information that is up-to-date, systematised and relevant:** it is imperative to get and access deeper and more reliable information about public sector performance, in terms that are relevant and understandable to its recipients and, hopefully, serve to promote the circulation, reuse and practical application of existing knowledge about public sector innovation. In the report "*Government at a Glance*", published in 2017 by the OECD, the case of Portugal points to opportunities for improving the collection of performance information on the integrity of the public sector (OECD, 2017: 156) and to the existence of limitations in internal control systems and risk management activities (idem: 158). In this context, these data gaps not only have impacts in terms of administrative dysfunctionalities, opportunity costs or slowing down change, but ultimately result in negative consequences for citizen confidence and the collective reputation of the public sector. Despite the initiatives undertaken to correct them, the specific scope of public sector innovation deserves particular attention because of its

importance as a vector of change that ensures change of this state;

- **Adaptation to the context of the Portuguese public sector:** the need to avoid a direct and mechanical transposition of innovation measurement and monitoring exercises that are carried out in the private sector to the reality of the public sector has been strongly stressed (Leyden, 2017: 9-11). For this adaptation to the specificities of the public sector, notable exercises of collaborative work on an international scale are under way: in this respect, it is enough to highlight the co-creation work within the framework of the Copenhagen Manual which, under the impulse of the Nordic Innovation Barometer, has brought a team of specialists from a multiplicity of national contexts - an international team in which LabX has guaranteed its presence and actively participated. In turn, this methodological caution must be complemented by an adaptation to the context of the *Portuguese* public sector, which by its structural characteristics and historical development presents significant degrees of distinction in relation to the State schemes consolidated in the Anglo-Saxon or Scandinavian (Esping-Andersen, 1990; Ferrera, 2010) contexts. Throughout this project, we wanted to ensure, nevertheless, the transfer of skills and an alignment with ongoing international initiatives in order to take advantage of the sharing of good practices.

- **Proposal focused on users' needs:** from the expressed will of managers and public leaders to access up-to-date empirical knowledge about their organizations regarding innovation strategies, we derive the need to present structured and relevant information more than just data, no matter how extensive and current it may be. Therefore, it was indispensable that the knowledge generated here could be accessible, understood and assimilated by its end users in order to induce, support or inform strategic decisions about innovation and experimentation. For this reason, it was important not only to meet their needs and expectations regarding data, but also to ensure the double requirement of eliminating barriers of accessibility to knowledge (always hindered by data literacy or plethoric dispersion of information) and, at the same time, to arouse or stimulate interest in the use of the results, encouraging their transposition into everyday practices.

More than oriented to the creation of an index or to the discussion of abstract concepts, the modelling and prototyping of a data viewer were centred on the real needs of managers and employees of the Public Administration, in order to provide data that are robust, rigorous and pertinent. As a tool to support the innovation strategies of public entities, this data viewer aims to provide a solution actionable by public officials that supports decision-making in a realistic way. In short: this experimental project aims to create value for public entities by providing a data modelling and visualization tool that, responding to the needs of updated and pertinent information about the present reality of public organizations, supports the design of innovation strategies for the future.

B. Mode of collaborative work

The development of an experimental project with this nature benefits from the active interconnection with partners in the innovation ecosystem. On the one hand, it makes it possible to recover and integrate the experiences and knowledge accumulated by them in similar exercises, avoiding starting from nothing and wasting the wealth of their contributions. On the other hand, it is crucial to cross views on the public sector, avoiding the consensus around the self-image that the Public Administration can develop of itself in the development of instruments to measure its initiatives. For this mode of collaborative work we have relied on the liaison with researchers of a research centre with accumulated evidence in this field (CIPES) and with the Public Sector Innovation Observatory (OPSI), the Organisation for Economic Cooperation and Development's (OECD) knowledge pole on innovation.

CIPES - Centre for Higher Education Policy Research was founded in 1998 and, since its creation, has developed academic research to promote methodologies for the knowledge and evaluation of public policies, in particular on the academic universe.

OPSI - Observatory of Public Sector Innovation works with governments to understand and encourage new approaches to solving society's complex problems by empowering public officials with new ideas, knowledge, tools and connections to help them explore new possibilities.

In its final stage, this experimental project also counted on the contributions of the team formed for this theme within the Collaborative Work Plan (Project 3.3 Innovation Barometer), created by Order no. 3614-D/2020, of March 23rd, of the Minister for State Modernization and Public Administration. In this context, a collaborative session was held on April 22nd, 2020, where the first results and preliminary products derived from this project were presented to the team to obtain critical feedback. This project team consisted of Filipa Costa (LabX/AMA), Bruno Monteiro (LabX/AMA), Sara Carrasqueiro (AMA), Ana Isabel Gomes (INA), Joaquim Mourato (Instituto Politécnico de Portalegre [Polytechnic Institute of Portalegre]), and Manuel Maias (Judiciary Police).

C. Objectives

After knowing the initial motivations and presenting the tripartite structure of the work team, we now state the main objectives pursued by this experimental project:

- **Diagnosis with updated empirical data obtained from the field:** the aim was to obtain updated information on the Portuguese public sector in terms of innovation (*scan*), consolidating a portrait of the Portuguese Public Administration as a whole. Taking advantage of the fact that the sample of selected public entities covers the diversity of structures comprised therein, crossing the central, regional and local Public Administration bodies and covering 16 Governmental Areas, we have an opportunity to count on updated empirical information on these different scales (among others, individual organizations, governmental areas, the Public Administration as a whole).

- **Bank of good practices:** to enable the quality of data to be monitored, concrete innovation practices - and not just statements of agreement - were requested. This request allowed the opening of a bank of "champion" innovations, starting from the section dedicated to the identification of the most impacting innovation of the participating entities, developed in the last two years.

- **Tool to inform and support management decisions:** this project allowed not only the creation of an individual description of entities through the presentation of indicators ("static" *reports*, for short), but also the construction of an *evidence-based decision making* dashboard with an interactive nature (in a "*dashboard*" format), which could later evolve into the definition of strategic options (*decision board*). From this dashboard it is possible for public entities to manage in real time, in a range of customisable options under development, the mode of data visualisation most suitable for the critical indicators in the success of their innovation strategies;

- **Demonstrative and inducing example of change:** given the importance of ensuring broad involvement of public entities in this initiative, encouraging a "search" for solutions in the service of innovation that includes the effective adoption of the innovation panel, it was decisive to obtain an example demonstrating the potential of this initiative. Illustrating its future possibilities from this first experimental attempt would be a preliminary to obtaining the institutional and political support needed to legitimise the initiative and to support leverage that would then extend its range of potential uses to all public entities. On the other hand, the mere fact of asking public authorities to contribute to research organised around these innovation monitoring axes has the potential to trigger a sequence of effects as a *driver of* change in its own right. Whether by highlighting the attention reserved for certain options of organizational practices, processes and policies or, even more, by raising awareness and inducing the adoption of strategic measures oriented to the principles that emerge from this exercise, this project can contribute to an awareness and behavioural change in public entities with respect to innovation.

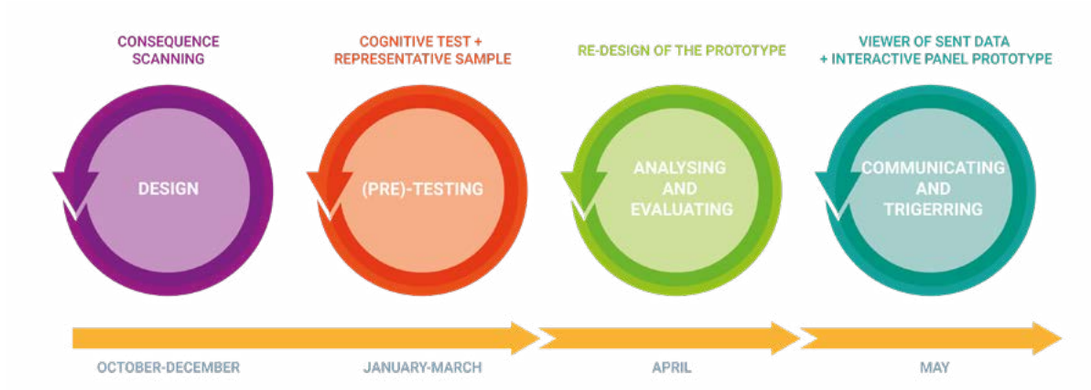
- **Overcoming the temptation of *rankings*:** the purpose of providing a support instrument for entities could be denied if a simplistic logic of hierarchization between public entities (*ranking*) was imposed. Although public entities may know their relative position in the Public Administration as a whole (or in its Governing Area), for the time being the presentation of a ranking that could induce competitive behaviour among public sector entities, motivate reserve attitudes in the

sharing of information or give rise to practices of tactical self-positioning of responses, is excluded. On the contrary, the objective is to promote a change on its own that starts from knowledge of reality and is guided by the priorities defined by the public sector in its strategies for innovation.

D. Process of the experimental project

The development process of this experimental project took place over four major cycles of iterations, each of which included its own mechanisms of methodological self-control. In this way, while it was guaranteed the fulfilment of the foreseen objectives that were unavoidable before the continuation to the next stage, it was also guaranteed stress tests that, according to an iterative logic, allowed the identification of opportunities or risks and the introduction of incremental improvements in favour of a solution progressively adjusted to the final objectives of this experimental project.

Figure 1
Phases of the experimental project



Source: Experimental project planning (LabX)

- **Design of the analysis scheme and research instruments:** in this first cycle, the design of the heuristic model and construction of the research instruments were the objectives. The structuring of the research protocols and the construction of the research instruments was carried out in a collaborative manner between the tripartite team, taking advantage of the wealth of knowledge accumulated on innovation in the public sector, on the one hand, and on measurement and monitoring methodologies, on the other, so that a recontextualization could be carried out to the reality of the Portuguese Public Administration. The entire action plan could be validated in good time by a consequence scanning exercise that brought greater clarity, sought to anticipate setbacks and defined clear priorities for all members of the project team.

- **(Pre-)Testing:** According to the experimental nature of this project, the research instruments were subjected to a battery of tests with the purpose of knowing and improving the experience of interaction with its potential respondents. Cognitive interviews based on the questionnaire survey, first, and a pre-test conducted from the electronic platform, then signalled barriers and indicated improvements. Before applying the survey instruments, a robust and sustained sample selection procedure was performed.

- **Analysing and Evaluating:** In this third cycle of iteration, the databases built with the responses of the participating public entities were processed and consolidated, and the results obtained for the Public Administration as a whole were intensively analysed. The enormous mass of data gathered allows a wide range of more specific analyses to be opened from now on. There was an opportunity to contact with the evaluation carried out by the public entities regarding the research instrument, in addition to submitting a preliminary version of the data presentation format for the consideration of a group of colleagues constituted by the Collaborative Work Plan.

- **Communicating and Triggering:** From the outset, it had been assumed that the objective went beyond the compilation of statistical information or obtaining abstract measures on innovation in the Public Administration, going above all through the creation of a modality of data access and use aligned with the real priorities, needs and expectations of its users, namely: public leaders or managers, as well as specialised technicians or policy makers. In this sense, this fourth cycle served to build data communication channels, structuring them in an accessible and actionable way for their main stakeholders. From the outset, individual maps characterizing the innovation of the public entities participating in this experimental project were sent out - and a webinar was organized for them to give us back their opinion and share their questions with us. In order to ensure the continuity of the incorporation of validation and evaluation moments, we have now opened the opportunity for the dashboard prototype presented here to gather the critical feedback from readers.

1. Process design and instrument construction

In its first stage, with the design of the process and the construction of a heuristic model, i.e. oriented to be operationalized in empirical prospecting rather than solely serving a conceptualization of innovation, it was possible to move on to a materialization through the construction of the research instrument. Given the space in which it operates, it was considered relevant to carry out a collective exercise of mapping the potential consequences and possible reactions generated by the creation of this measuring instrument. In addition to enabling the design of action scenarios, this exercise allowed a more intense consultation between partners and the definition of clear roles during the project.

i. **Heuristic model:** the innovation lifecycle

Starting from a preliminary work of survey, capture and crossing of competing or complementary proposals used to characterize and study innovation in the public sector, a space of thought was mapped that allowed to define with more solidity the perspectives appropriate to the context and purpose of this experimental project. From this review and critique work carried out by LabX resulted a proposal for guidelines on the most relevant dimensions to be adopted for the creation of a program for modelling and diagnosing public innovation for the Portuguese reality. The proposed scheme takes into account aspects such as the mission of the public sector and the socio-political context in which it operates, the dimension, complexity, diversity and organizational structure of the public sector, or the specific characteristics associated with the phenomenon of innovation embedded in the public sector. Given that more than a classification scheme or a typology of categories, the modelling of the process of production, application and reproduction of innovation was intended, the perspective of the lifecycle was adopted: public innovation knows (pre-)contextual conditions that promote its emergence, institutional processes that enhance and accelerate its application, derives in results and, logically, implies the dissemination and alteration of the ecosystem in which it is located. This whole lifecycle does not follow a simplistic and rigid logic, so that the energy invested in each of these stages triggers an activation of the germination circuit, acceleration, impact and dissemination of innovation. Therefore, this circuit can be short circuited, supporting (un)equilibrium between its components - which, thanks to this conceptualization, are registered and duly considered.

Innovation lifecycle

Based on the vision presented by the Public Sector Innovation Observatory (OPSI, 2016), the “innovation lifecycle” proposal presents a configuration that places it advantageously to overcome the usual obstacles in the treatment of public sector innovation, namely by expressing the following characteristics:

- A **holistic definition** of innovation: innovation initiatives are seen as articulated in a systemic way, assuming that there are connections between them and that there are cross implications between them;

- A **procedural interpretation** of innovation: innovation is seen as aligning an iterative process of development which must be made explicit and framed through initiatives aimed at all its stages and which is dynamic

and cyclical in nature, since innovation only continues to be so on the condition that it continues to excel continuously;

- A concern for **sustainability, reuse and replication**: efforts must be able to be translated into learning that can be accumulated, transferred and reused in order to avoid "inventing gunpowder" over and over again;

- An **orientation towards (experimental) action**: the very sequence of steps illustrated by this lifecycle converges towards the creation of tangible results and effective changes, obtained through experimental projects that learn from the iterative creation of "errors" and the introduction of incremental improvements;

- **Flexibility and adaptation to the context**: from this methodological model, innovation initiatives can be adapted to the context, showing great flexibility in their operationalization, since they can be declined according to the specificities of each project;

- **Promoting the evaluation culture**: innovative initiatives should be monitored, measured and evaluated in order to signal improvement points and make improvements in successive implementation attempts.

The design of instruments to monitor the presence and intensity of innovation activities within the public sector is a complex and demanding exercise. This complexity is justified both by the specificity and scope of the scope(s) of action of the organizations that make up the public sector, and by the nature of the innovation processes (multifaceted, cumulative, multi-stage and collaborative) that take place within the Public Administration. In these circumstances, it was crucial to find an approach that would challenge traditional conceptions of existing thinking about public innovation:

- **Opposition between *internal* and *external*:** it was indispensable to articulate the dimension of internal transformation (organizational, with reflection at the level of process design and the content of the different management levels) with the very transformation of the external environment which, on the one hand, legitimizes and feeds this need for innovation (or not, creating obstacles) and, on the other hand, constitutes the measure of concretization of this same innovation, since it is in this external environment that the results and the creation of public value materialize;

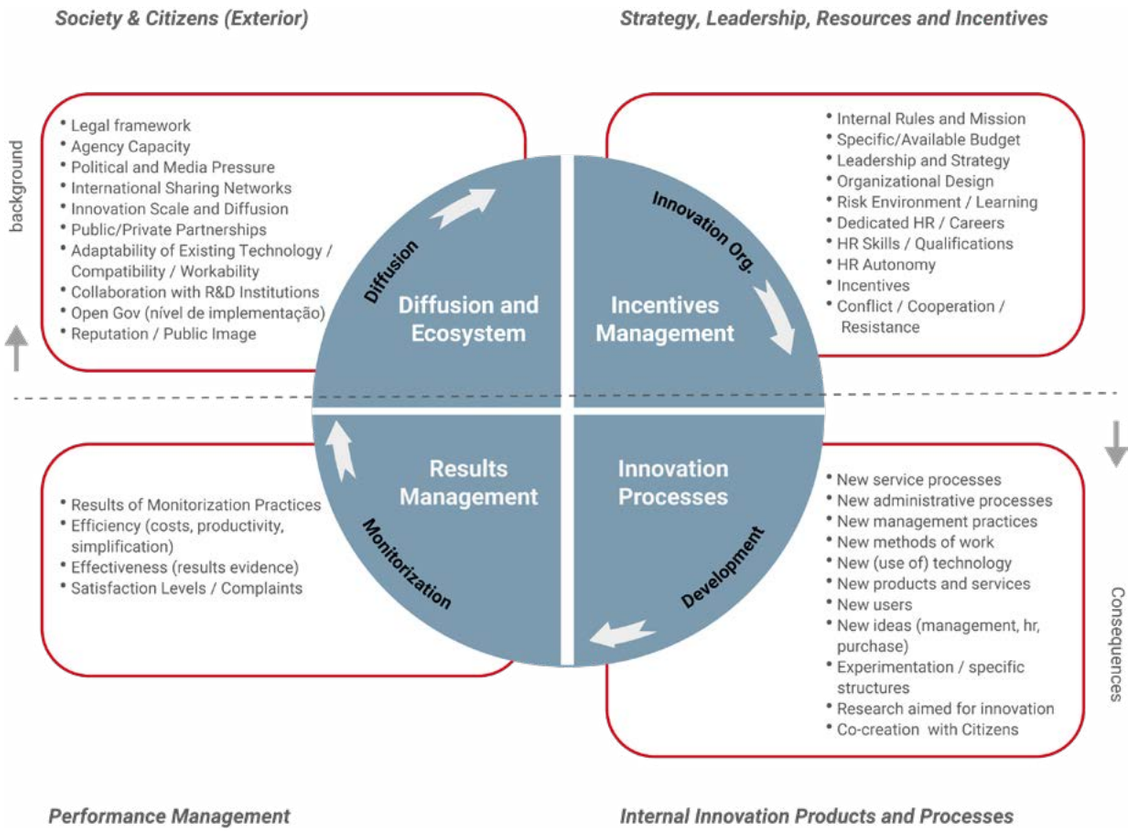
- **Opposition between ideology and practice:** there is a need to (re)connect the evaluation of the development phases of innovation processes, as these should not only stop at the inconsequent launch of new proposals or solutions, but should enable them to be developed within the organisations themselves, monitored for their effectiveness and possibly spread externally (where applicable);

- **Opposition between *before* and *after*:** the traditional dimensions of impact and performance evaluation, which imply the need to consider the relationship between resources used and results obtained, are seen from a perspective where the results obtained and the respective

evaluation create their own challenges, i.e. the after may be a new before.

- **Rigidity, linearity and "innocuity" of models:** : innovation initiatives are not only simple episodes or "snapshots", which arise from "nothing" and disappear without a trace, they are continuous processes over time, even if they are disjointed and dysfunctional. Then, innovation does not follow linear paths, but can be initiated or accelerated by the introduction of stimuli and investments at different moments, besides being able to change over time by the very logic of duration. The models and the diagnoses that make them concrete are not neutral, they are producers of changes by their very existence, since the participants - intuitively or intentionally - position themselves before the demands that are placed upon them and assimilate these indications to the detriment of possible alternatives.

Figure 2
Heuristic scheme for innovation in the public sector context



Source: CIPES & LabX/AMA

To respond to these methodological concerns, a heuristic model has been developed, the graphical representation of which is presented above, organized by segments that are part of a production process of innovation inspired by the notion of "lifecycle". The proposed approach assumes a multidimensional, procedural and holistic nature:

- **Multidimensional:** this heuristic model accepts the multidimensionality of public innovation, integrating indicators following the integration of the four areas associated with the innovation cycle: dissemination and ecosystem (environmental context); incentive management (organisational context); innovation processes (application and implementation of innovation); and results management (innovation impacts);

- **Procedural:** the existence of an innovation cycle makes it possible to

accept the transitions, conversions and transmissions between the moments of the innovation production processes, assuming that the resources available for innovation are dependent on the ecosystem and that, in turn, the incentives and processes are dependent on the resources available. On the other hand, the results of innovation are dependent on the incentives and processes of innovation and the ecosystem is dependent on the results of innovation obtained, at which point the cycle of innovation implicit in this proposal converges. In this way, we clarify problematic and unprofitable discussions about precedence and move away from unilinear and finalist processes;

- **Holistic:** the existence of the horizontal and vertical axes, which structure the four moments of the innovation cycle, makes it possible to highlight the mutual belonging between these dimensions of innovation and the "lines of force" that pull by their procedural dynamics, exposing their movements (for example, between the "interior" and the "exterior" of Public Administration). The horizontal axis of the model defines the background and the consequences of the innovation process. Two underlying characteristics are presented by its vertical axis: on the one hand, indicators associated to the context (external to the institution) and to public sector entities (surrounding society and innovation ecosystem); on the other hand, indicators associated to the monitoring and dissemination and the search for novelty and development.

ii. Consequence scanning

The methodology of *consequence scanning* consists of carrying out an exercise to signal, at an early stage of the project, the intended and unintended consequences that the teams anticipate, using this identification to build a structured action plan (which may include a contingency plan), assigning concrete actions to the different managers in order to ensure the team's capacity to react to threats, opportunities and risks. Based on an existing initial proposal, LabX developed an original technique for application with the partners of this project, and there is an application guide available for replication here.

Among the consequences anticipated as important, we shall highlight:

- **Retain the specificity of public innovation:** the need to identify differences and/or characteristics of the public sector, due to the specificity of the public sector and the plurality of institutions understood there;

- **Avoid reductionism:** Given the risk that this instrument may stimulate "blind" comparison or competition between entities, it should be avoided that it becomes a ranking that reduces the plurality of facets of innovation to a hierarchy, that is appropriate with reservations or tactically by participants, or that is seen as a static measurement;

- **To have a heuristic nature:** the importance of being an instrument that supports and informs public policy decisions, more than just a portrait of the reality that is precisely intended to transform;

On the one hand, as we have seen, the application of the consequence scanning in the context of the project allowed for a structured reflection on the impact of the experimental project in a still embryonic phase of the creation process. On the other hand, its realisation made it possible to guarantee, by itself, a meeting point between the interpretations and expectations of the project team and the materialisation of a contingency plan for the mitigation of possible consequences, adjusted in a period of time and assigned to a responsible person.

iii. The survey construction by a questionnaire: combining the symbolic and material dimensions of innovation

Starting from the heuristic model, it was intended to build a research instrument that would express an alignment with the organization principles used and that, at the same time, would guarantee the creation of a coherent and robust diagnosis that would meet all the requirements and objectives defined for the project. The structure of the questionnaire follows a logical sequence, having unfolded in operational terms the concurrent structure of the innovation heuristic scheme and its own logic of organization in a lifecycle. In order to try to reduce the possible gap between discourses and practices regarding the adoption of public innovation, we reconciled the questions posed to the participants about their (self-) representations about the innovation processes and the organizational characteristics of the public entities to which they belong, with the realization of very targeted requests for illustration of the use of concrete innovation instruments which are effectively used, with indications of the objective characteristics of the organizations and with the concrete indication of the innovations with the greatest impact. Since it was considered, based on the review of specialized literature and other practical examples of measuring public innovation, that two years was the indispensable period for properly considering the development of an innovation and its impact, this time interval was used for the questions.

The sections of the questionnaire cover participants' perceptions of innovation in their public entities, which may be subject to a margin of subjectivity, together with objective information on organisational structures, the application of innovation instruments and the properties of the most "real" innovation. From another perspective, the questionnaire reconciles the attention paid to institutional structures, budget allocations or products resulting from innovation, i.e. the more "material" dimensions of innovation, with attention to the more "intangible" dimensions of innovation, such as the possession of expertise, organisational culture, the methodologies used or the values subscribed to by leaders. In both ways, an attempt was made to control the information provided by combining the symbolic and material dimensions of innovation. In short, the questionnaire has six sections:

I. **Description of the strategic objectives and nature of the entity:** asks about the nature of the organization within the Portuguese public sector, through the description of its mission (strategic guidelines);

II. **Characterization of the innovation environment:** from the outset, it was intended to know the changes and changes made in the last two years by the public entity in terms of new products, services, or processes, ascertaining their impact. It was then asked to identify, on a case-by-case basis, all the innovation instruments that entities regularly use in their activities, using a comprehensive list of 38 methodologies, techniques and tools applied in the universe of public innovation. These tools and techniques were, moreover, organised into four categories according to their usefulness in the production of innovation (exploitation; enhancement & testing; transformation (technological, above all); management), which allows for individual attention to each of these components. In addition, the partnerships established by the entities with partners in the innovation ecosystem are mapped out with a view to the efficiency of the processes or the quality of the goods or services provided;

III. **Characterisation of the organisational environment:** the aim is to assess the positioning of the public entity in relation to dimensions that enable it to characterise its organisational environment, such

as risk aversion, evaluation and monitoring culture, or existing response capacity.

IV. **Innovation with greater impact:** the focus here was on the description of the innovation with the greatest impact already achieved by the public entity, requesting the identification and demonstration of the properties of innovation that had the greatest impact on the organization's ability to meet its strategic objectives;

V. **Characterisation of the respondent entity:** in order to obtain solid indicators of institutional characterisation, a set of information was requested on the organisational typology, the budget allocation, the size and composition of human resources;

VI. **Evaluation of the questionnaire:** taking into account the experimental character of this project it was important to include a section for the evaluation of the questionnaire itself, in order to validate the self-perceived utility, the contents, the architecture or the language of this research instrument, as well as to listen to suggestions and criticisms from the respondents.

For a closer look, the final version of this instrument is presented here (passeword: 1234).

Innovation tools

In order to complement the self-diagnostic on the knowledge, perceptions and orientations of public entities regarding innovation within them, we wanted to look at the materialized dimension of innovation expressed by the use of instruments, methods and techniques. The use of these tools allows a more rigorous approach to the innovation that actually exists in public entities, since the tools are intended to be activated on a day-to-day basis, requiring skills and producing consequences, and constitute a mediation between the idealized strategy and the real practices of public innovation.

The identification of the instruments was based on the mapping of innovative approaches (*"Landscape of innovation approaches"*) created by Nesta in 2018. Based on this inventory, we adapted the options to the context of the Portuguese public sector, by selecting alternatives that had the nature of relevant symptoms to describe this context. On the other hand, our tool mapping was concerned with reconstructing the innovation production process, which is why the segmentation we used has four stages. In particular, we felt the need to introduce a whole block specifically dedicated to the tools used in the management of public entities.

The conceptual organization we have adopted allows us to methodologically support the division of the instruments into four new categories, aligned along a logical and practical sequence:

- **Explore & Define:** the scope of these tools is related to the context of the problem, calling for research to identify pain points and obstacles, adopting the users' point of view in a privileged way, and to define the challenges to be solved;

- **Power (Accelerate) & Test:** at this stage, we find the tools that apply to the innovation process in order to accelerate or validate it through experimentation;

- **Transform & Solve:** groups the tools used to operate the transformation caused by solutions, particularly of a technological nature, which are adopted by the Public Administration in the development and implementation of changes;

- **Manage and Monitor:** this includes all the instruments relating to management and administrative processes required for monitoring solutions or the adoption of innovative ways to control the performance of organizations.

2. (Pre-)Testing

The second phase of the project included a succession of "test rooms" to validate the methodological robustness and to use the experience of participants to improve the research tools. Cognitive interviews were used from the outset to deepen the mechanisms of reception and understanding of the research instrument by participants within the foreseen profile and to frame the formulation of responses in an optimal manner by minimizing or eliminating barriers or biases. Then, it was possible to test the application of the survey by questionnaire from its electronic platform, allowing that, besides improving the structure and the enunciation of the questions, the use of a digital channel to obtain answers could be improved. The application of these epistemological surveillance procedures was aimed at relieving the questionnaire response burden, namely in terms of cognition and usability, enhancing the solidity of the answers by ensuring alignment between the expectations of researchers and the acts of respondents and encouraging a higher response rates despite the lack of mandatory response. Throughout this phase, sampling operations were also carried out to circumscribe the set of public entities participating in this application in an experimental regime.

iv. Cognitive interviews

The methodology of cognitive tests applied to research tools, designed in the context of this experimental project through the application of cognitive interviews, aimed to evaluate the four moments of the cognitive process of response, specifically the reception of the questions (understanding of the question), the information that the respondent has to answer in a complete way (retrieval of information), the accuracy of the answer given (decision processes) and the response

options (response processes). In this experimental project, the application of cognitive interviews sought to ensure the structured tuning of the instrument (questionnaire), checking whether the respondents understand the questions asked and assessing whether they correspond to the intentions and expectations formulated. At the same time, it aimed to assess the extent to which respondents are able to provide accurate and secure answers, ensuring that the instrument makes sense to the respondents and allows them to capture whether their knowledge is relevant to the context of the project. In this case, cognitive interviews were applied to colleagues in the Public Administration with professional profiles similar to the expected respondents; in order to observe in particular the perspective effect that could be introduced by departmental affiliation and hierarchical position, cognitive interviews were applied to colleagues from a single public entity. Two limitations can be noted here: the low number of interviews and, although it is an intentional option in methodological terms, the belonging to a single organization.

Cognitive interviews make it possible to minimise the margins of uncertainty regarding the meaning attributed to the questions by the respondents in the production of answers, allowing, moreover, their reformulation with the aim of lightening the effort of understanding, remembrance and enunciation of answers (an effort so often responsible for the extension of response times and, also, for the increase in dropouts). It also sought to make the language clearer and as unequivocal as possible for the profiles of the recipients surveyed, by reformulating and standardising the terminologies used, by using short enunciations - by way of curiosity, the ideal length being 10 to 12 words - to keep the concentration of the respondent stable and by creating an effort map to signal unclear, too sparse or otherwise redundant or irrelevant response options from the point of view of the respondents (even if concurrently relevant). This methodological operation signalled the existence of biases, misunderstandings, ambiguities and heterogeneity of understandings, which were tried to correct in advance through the creation of compensation mechanisms or contingency measures (e.g. shortening questions, abandoning technical concepts, developing a glossary).

v. Electronic platform testing

Prior to the launch of the survey by questionnaire, a pre-test of the virtual platform for the survey application was carried out, either to test the architecture of the survey instrument itself or to verify the usability of the platform itself. To this end, a pre-test panel of 11 employees from a public entity, distributed over different hierarchical levels, was chosen to potentially cover all possible points of view of differentiated perception of the issues, to which was added a set of 11 researchers from the partner research centre (CIPES), to test and give “critical feedback” on their user experience. This test sought to simulate with the participants all the contact phases required by the application of the research instrument: from sending out the questionnaire, to carrying out the answers by the respondents autonomously at a distance, to monitoring the answers by the inquirer, including sending reminders to the participants who had not yet answered. In addition, it allowed to verify other aspects inherent to the use of the platform, such as the adequacy of data extraction for further analysis or the management of reminders.

After the application of these tests, which included collecting feedback from participants through a specific evaluation section, gaps were identified and proposed solutions to the usability flaws were defined, including improving the graphic layout of the questionnaire, reducing the number of clicks and the number of pages in the questionnaire, and standardizing the response scales.

vi. Reformulation of the questionnaire

Based on the results of *cognitive testing* and platform testing, incremental improvements were defined and applied until a stable version of the research instrument was obtained. *Cognitive testing* contributed to the use of clearer language, to the organization of more understandable response options, and to the condensation of the effort required from participants to optimize their experience and the quality of their responses. The platform's testing allowed usability flaws to be detected, which were later used to define the improvement plan applied. The successive versions resulting from this test procedure were always accompanied by the project team, ensuring their orchestration with the intentions of the experimental project.

vii. Sampling operations

For the definition of sampling a reliable, unique and aggregating source of all entities in the Portuguese public sector was sought. Given the need to choose an inventory of this nature, without, however, there being an unequivocal choice due to the plurality of compositions available, it was concluded that the perimeter of the public entities identified for budgetary purposes by the *Direção-Geral* do *Orçamento* (Directorate General for the Budget) (2018), could be an adequate repository to build the sampling framework due to its relative update, its completeness, its institutional anchorage of solid criteria (budget distribution), and its typological division of entities, ideal for the stratified sampling process performed.

In a sampling procedure, the stratified sample seems to be the ideal choice when it is known that the observations of the population are broken down into classes where the observations are homogeneous within the same class and heterogeneous between different classes. Since the government entities do not correspond exactly to this situation, it was considered that this classification respects, with some limitations, this principle. From the sample selected three main groups stand out, and for each group the number of respondents was defined, summarizing in the following composition: Central Government (160 respondents), Regional Government (30 respondents); and Local Government (30 respondents). Using stratified sampling, it was later considered that each category corresponds to a stratum of the population, and the number of entities to be drawn from each stratum makes the proportion of each stratum in the sample equal to the proportion of each stratum in the population. In the particular case of Central Administration, the population stratum also respected the division by government areas, seeking to have a representative population stratum that encompassed all areas. After defining the sample for each stratum of the population, the selection of entities was made at random, thus identifying the entities that should be contacted to participate in this initiative. In this case, we remember that it was not intended to extrapolate the results to the whole Public Administration, nor even to have pretensions to a representativeness that would replace direct contact with public entities. In truth, it should be known that the main objective was to develop, in the experimental process, an appropriate innovation dashboard usable by the different public entities and, in particular, to test the empirical suitability and methodological robustness of a research instrument that would respond to this challenge.

viii. Application of the questionnaire

After the selection of the sample, the questionnaire was launched on February 20th, with the first response season running until March 4th. In order to sustain the contact with the public entities, a personalized letter was elaborated addressed to the management body of the public entities, which explained the context of this experimental intervention and sought to consolidate

its institutional legitimacy. Although a solid repository of institutional contacts was used (Information System of the State Organization, SIOE), the impossibility of obtaining an important part of the addresses of the direct addressees contributed to the difficulty of sending and, logically, receiving the questionnaires on time. The whole process of identifying contacts is, in itself, a very time-consuming task, in which all the difficulties of accessing up-to-date information on the points of contact of public entities are maximized. These difficulties are aggravated whenever the sending of initial messages depends on manual validations or when faced with generic destination addresses.

The electronic platform was then used to send the surveys by questionnaire to the participating public entities and to manage the application of the instrument. Throughout the period in which the questionnaire was available, the participants were permanently given support to answer the questions and doubts they shared by e-mail or telephone. The management of the relationship with the participants may prove to be very time-intensive: although it is possible to automate the sending of reminders to laggards or messages of thanks to those who fill out the questionnaire, there were direct questions sent by public entities that needed personalised answers, also the need to call for participation, through the sending of reminders. Although the deadline for replying was extended for a further two weeks in order to extend the response rate and to fill in incomplete replies, it was found that, for future application, in addition to the replies to the challenges already mentioned here, a longer response period should be considered. At the end of the period of application of the survey by questionnaire, a total of 92 replies were found.

3. Analysing and Evaluating

After the collection of replies, the consolidation of the database - automatically generated by the electronic platform - and the exploitation of the data began. In this way, it was not only possible to implement the analysis protocol that was initially planned, but also to broaden the range of analytical options once the potential of the data had been verified and to develop a series of proposals for analysis and interpretation (e.g. aggregated or composite indicators) born from the treatment of the databases. This first level of data analysis results in an up-to-date, robust and integrated knowledge of the facets of innovation in the Portuguese public sector.

ix. Diagnosis of public innovation

Although an attempt has been made to ensure that all the institutional levels of the Public Administration and, within the Central Administration, all the governmental areas, it is considered that it makes sense to discuss their statistical representativeness, both because this is not the objective of this exercise and because of the number of observations. However, it can be stated that the delimited subgroups or segments are effectively represented, guaranteeing typological diversity and empirical solidity. When the percentages of representativity at the aggregate level are compared, it can be seen that there is a small under-representation of municipalities to the detriment of an over-representation of central government.

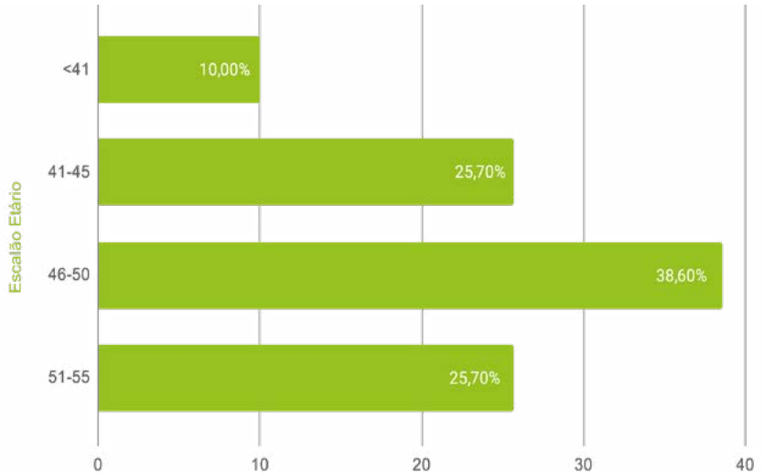
The response rate ended up at 42%, which satisfied the methodological needs foreseen in this experimental project. This response rate conditions the sampling process, as well as the analysis and the conclusions that we can draw from the questionnaire, forcing at the present time

methodological preventions in attempts to generalize or extrapolate the results.

- **Description of the strategic objectives and nature of the entity:** in relation to the recipients of the activities of public administration entities, it is concluded that the majority of respondents are directed towards providing services to citizens and/or companies. Regarding the public servants' academic qualifications, it was retained the proportion of workers within each public organization with graduate and posgraduate degrees, given the particular context of the Portuguese Public Administration (Figure 4). Through the reorganization of data, we noticed that only a small number of public entities has less than 20% of qualified workers. Following this line of having administrative data to complement the diagnosys, it was enquired about the percentage of budget dedicated exclusively to innovation activities (Figure 5). We notice that the majority of organizations devotes 1% or less to innovation, with a significant number of entitities that don't reserve explicitely any budget for such activities.

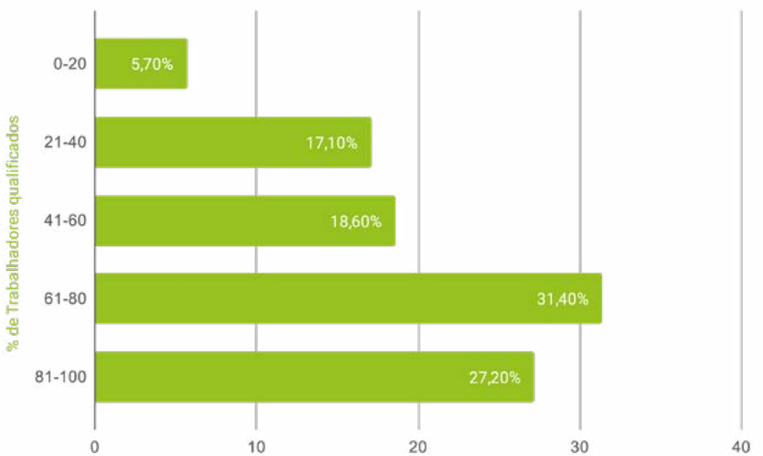
- **Characterisation of the innovation environment:** mentions of the possibilities opened up by innovation processes are systematically positive, and only three cases with a negative impact are reported. With regard to the instruments, tools or methodologies used more than once in the last two years, a good number of entities use very few or none of these practical mediations to mobilize, activate and materialize innovation, which shows a different picture of innovation from that presented so far in the replies to the questionnaire. The hypothesis is that there is a gap between the plan of knowledge/ideology of innovation and the plan of its daily action. There is also a very wide dispersion between the types of partnership carried out by public administration

Figure 3
Average age of the institution's employees



Source: InovX questionnaire

Figure 4
Proportion of workers with academic degree



Source: InovX questionnaire

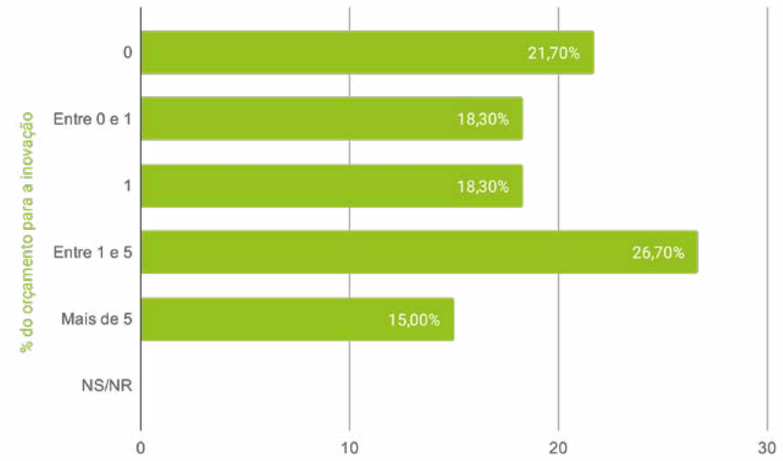
entities, with 37% of entities carrying out only two types of partnerships at most. This issue shows, however, that the entities seem to have well established networks of formal relationships.

- **Characterization of the organizational environment:** The main result we can observe is that there is a huge diversity of responses among the participating entities, indicating that the topics that are unequivocally more relevant in terms of innovation are not necessarily shared within the Public Administration. There are only three changes with which most respondents identify considering their organisation, namely: organisational improvements in management, changes in the mission of the entity and also the existence of a monitoring culture. The most striking indicator seems to be the widespread finding of an inability to reward the most proactive employees with incentives.

- **Solution with greater impact:** in order to bring the monitoring of innovation closer to its real achievements, while establishing a bank of "good practices", the collection of innovative solutions applied to the Portuguese public sector should be noted. After the description of its implementation, participants were asked about the origin of the innovation. The inspiration in other realities, be it in the public sector (more dominant) or in the private sector (less significant), emerges as the main source of innovation. The importance attributed to the search for improvements in the quality and efficiency of the activities provided, as well as a greater adequacy of the needs of its users, are highlighted as the main objectives of the innovations in question. In relation to the resources allocated by the entity in the process of implementing the innovation in question, the use of human resources and the dependence on existing internal structures are dominant. Without a similar meaning, the

Figure 5

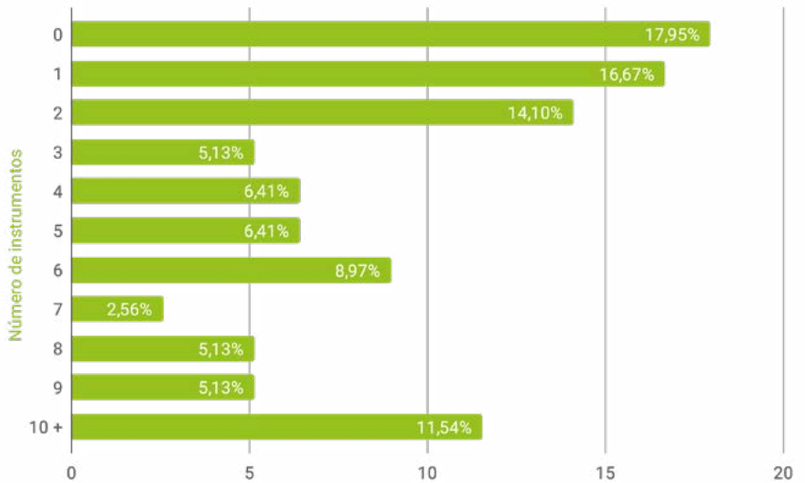
Percentage of budget dedicated to innovation activities



Source: InovX questionnaire

Figure 6

Distribution of the number of instruments used by each entity



Source: InovX questionnaire

Table 1

More widespread innovation processes in the Portuguese Public Administration

Innovation Process	% Institutions	% Positive Impacts
Has implemented changes in the administrative proccedures to improve the efficiency in the provision of products and services	90,5%	100%
Has changed the provision of already existing goods and services in order to improve them	90,4%	96,9%
Has created the possibility for existing products and services being demanded and provided digitallly	87,3%	96,8%
Has developed new products and services to directly serve citizens, companies or other organizations	86,4%	98,2%
The institution's image and public reputation has changed thanks to te implementation of changes or new products, services and proccedures	78,8%	100%

Source: InovX questionnaire

Table 2

Less disseminated innovation processes the Portuguese Public Administration

Innovation Process	% Institutions	% Positive Impacts
Has collected systematically information about the levels of satisfaction ot its workers	54,2%	84,2%
Has organized cocreation sessions or has used participatory mechanisms to involve citizens and/or compenies in one or more projects	54%	97,0%
Has created organizational structures explicitly dedicated to the experimentaion (such as teams or labs)	37,9%	95,7%
Has created and circulated internally materials about the themes of organizacional change and innovation	37,1%	88,0%
Has introduced or reinforced formal mechanisms for the valorization of the individual or collective performance of workers (e.g. prizes)	33,3%	95,7%

Source: InovX questionnaire

Table 3

Opportunities

Institutional features	Average (Scale 1-7)	% Strong Agreement (6-7 Answers)
The promotion of organizational improvemnts is present in the direction of the institution	**5,75**	**65,8%**
Promotion of organizational improvements is present in the institution's mission	**5,66**	**61,5%**
Strong culture of monitorization and evaluation for the accomplishment of the institution's goals	**5,04**	**53,4%**
Existence of capacity to antecipate and solve medium- and long-term range problems	**4,79**	**31,7%**
High level of exigency from the users for the implemention of improvments	**4,52**	**30,1%**

Source: InovX questionnaire

Table 4

Challenges

Institutional features	Average (Scale 1-7)	% Strong Agreement (6-7 Answers)
The internal culture stimulates risk-taking and tolerates errors	**3,60**	**11,1%**
Use of tests and experimental methods to evaluate a solution before its implementation	**3,57**	**20%**
Capacity to reallocate the time and tasks attributed to workers in order to improve the organization	**3,43**	**13,5%**
Human resourses with sufficient knowledge about innovation techniques applied to the public sector	**3,40**	**12,5%**
Proactive workers in finding solutions are rewarded with incentives	**2,71**	**11,6%**

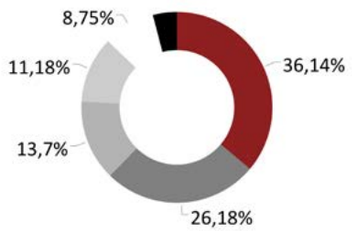
Source: InovX questionnaire

Figure 7

Highest impact innovation

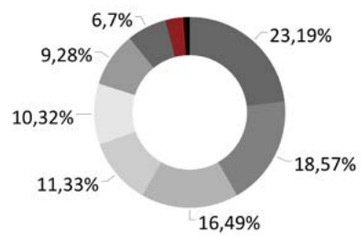
Origem da inovação

Legenda:
- Inspirada por soluções do setor público mas adaptada à sua entidade
- Inspirada por soluções do setor privado mas adaptada à sua entidade
- Aplicada pela primeira vez no contexto do setor público ou privado
- Sobretudo replicada ou imitada de outras soluções
- Outros
- NS/NR



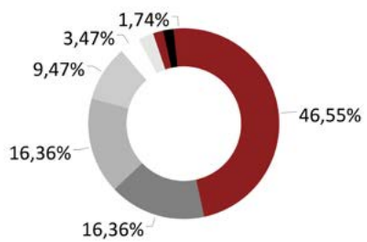
Objetivo da inovação

Legenda:
- Aumento da qualidade dos produtos/serviços prestados aos destinatários
- Diminuição dos custos e/ou aumento de eficiência
- Responder às necessidades expressas pelos destinatários
- Responder a diretivas superiores
- Aumentar a satisfação dos colabores
- Aumentar a transparência para o exterior
- Diminuição de desperdícios na ótica do utilizador
- Outro
- NS/NR



Recursos utilizados na implementação da inovação

Legenda:
- Recursos humanos e estruturas internas
- Colaboração com outros serviços centralizados do Estado
- Compra de serviços privados de consultoria
- Colaboração com entidades da administração regional ou local
- Outros
- Parcerias com empresas privadas (não consultoras)
- Colaboração com instituições de ensino superior ou laboratórios de investigação
- NS/NR
- Organizações internacionais ou outras entidades estrangeiras
- Parcerias com associações da sociedade civil ou do terceiro setor



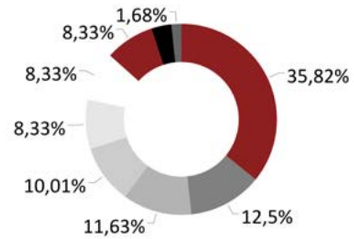
Source: InovX navigation panel

Figure 8

Highest impact innovation

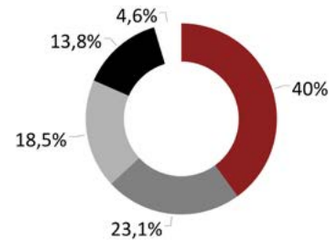
Motivação para a realização da inovação

Legenda:
- Necessidade de responder a novas orientações estratégicas definidas pela gest...
- Necessidade de cumprir regras impostas externamente
- Sugestões dadas pelos colaboradores da entidade (externos à gestão de topo)
- Sugestões dos utilizadores dos produtos ou serviços da entidade
- Aproveitar a disponibilização de novos produtos, serviços ou equipamentos (m...
- Outros
- Pressão externa de natureza política
- NS/NR
- Pressão externa de natureza mediática



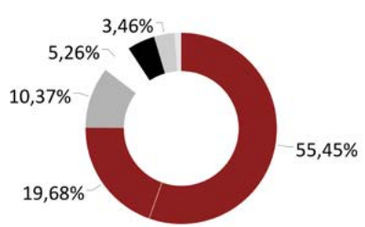
Modo de avaliação

Legenda:
- Há planos formais de avaliação já realizados ou aprovados.
- Existem planos de avaliação em preparação, mas ainda não formalmente apro...
- Não existem quaisquer planos formais de avaliação dos resultados
- NS/NR
- Outros



Fonte de financiamento

Legenda:
- Fundos do orçamento da entidade
- Fundos ou programas europeus
- Transferências ou programas do governo central
- Outros
- NS/NR
- Fundos ou programas de instituições de desenvolvimento regional
- Fundações ou outras instituições privadas nacionais



Source: InovX navigation panel

use of own funds, namely from the organisation's budget, for the financing of innovation is clearly noted. The need to respond to new strategic guidelines defined by top management appears as the main motivation.

x. Moments of self-control: survey evaluation section & work session on preliminary version of the data viewer

As in other cycles of this experimental process, a pair of self-control methodological exercises were included here. From the answers compiled in the evaluation section of the questionnaire, it is possible to ascertain the proposals of the entities, among them:

- **Reducing the length:** the need to reduce the number of questions as some participants left the indication that they considered the questionnaire extensive;
- **Consider a broader time horizon:** the interest in taking into account innovations applied for more than two years, a period that proved to be limiting for some entities when they wanted to expose innovations introduced over a longer period of time, which is perhaps an indication that "innovation" and "novelty" are not synonymous, either because innovations take time to be developed within the Public Administration, or because they take time to produce significant and tangible effects;
- **Increase the period of time for answering the questionnaire:** the period of time for which the questionnaire was available should be longer.

Similarly, as soon as a more stable version of the data viewer (version 0.5) was consolidated, a test session was held within the framework of the Collaborative Work Plan (System of Incentives for Innovation in Public Management). The working group, composed of three employees from different public entities, acted as a panel of experts, served as "beta testers" of the data viewer. In this virtual collaborative session, led by LabX on April 22nd, 2020, the experimental project "InovX: Public Sector Innovation Panel" was introduced; the Dashboard and its data viewer (prototype version 0.5) were presented; and questions were raised regarding the activation of contributions, with the consequent registration of proposals for improvement to the data viewer as well as arising. There were, in all, seven contributions in order to make this instrument even more holistic and reliable and to speculate possible ways or recreations of the project. After the integration of these contributions, a new version of the data visualizer was developed (version 0.6), which is presented later in this report.

4. Sharing and activating

Because the analysis of first level data, which consists of a diagnosis like the one presented above, needs to be complemented by the development of solutions for access, visualization and appropriation of the data by the interested parties, a solution of interpretation and presentation of the data was developed that could respond to the needs and expectations most prominent of its recipients. The counterpart promised to the participating public entities was that they could have access, at the end of the analysis process, to a concise, self-explanatory and informative report that not only provided up-to-date knowledge on their innovation practices, but also placed them in relative terms within the Public Administration as a whole. The production of this data viewer, a characterisation report with a consolidated formatting and issued automatically from the data processing platform used (Microsoft Power BI), constitutes the second level of data analysis. For a third level of data analysis, a prototype interactive viewer was built, customizable by public entities for the consultation and use of their data for strategic purposes.

The reading of this chapter in no way replaces the consultation of the full technical report of the experimental project, which can be requested directly to LabX.

xi. **Data visualizator:** deliverable information to public organizations

From the management and data processing platform, we can issue a report, even if "static", oriented to meet the needs for empirical information essential for the development of a contextualized innovation strategy. Once a version of this data viewer has been consolidated, an individual copy can be sent to each of the participating entities. The data viewer is organised into six components.

Summary table of the public authority

The first component is a summary table that characterizes the public entity as a whole in terms of volume and composition of two objective strands: the staff and the budget. For staff, in addition to the total number of employees, the proportion of employees with academic training is used as an indicator of distinctive qualification in terms of skills. In terms of budget, not only the total value of the budget is recorded, but also the percentage specifically dedicated to innovation activities.

- **Strand 1:** Total number of employees of the entity;
- **Strand 2:** Percentage of employees with higher education;
- **Strand 3:** Total budget of the entity;
- **Strand 4:** Percentage of the budget dedicated to innovation.

From the information available in this component, public entities are able to extract the basic figures for the characterisation of their public entity and also to position themselves in comparative terms within the Public Administration as a whole with regard to the above-mentioned aspects.

Scoreboard of innovation instruments

The second component consists of a presentation of the results derived from the effective use of innovation instruments by the public entity, using a *scoreboard* format to report on the overall intensity value in terms of effective use of innovation operationalization instruments. Given the organisational scheme used to map the innovation instruments, the individual result of the participating entity can also be presented for each of the four categories that define the stages of the innovation production process:

- **Exploration & Definition:** groups the tools used to define the problem area, focusing on the user experience, and to explore potential solutions to the challenge;

- **Potentiation & testing:** lists the instruments used to test a solution (such as prototyping) or to speed up the project development process (through partnerships, for example incubators);

- **Transformation & Resolution:** composed of instruments used to operate a transformation of an ongoing process or to solve in a concrete way the question of implementation, especially through technological or digital means (which should be highlighted within this experimental project);

- **Management:** it groups the instruments that allow to manage and direct a public organization in an innovative way, in order to emphasize that innovation not only derives from an innovative process, but also requires a product or people management that is itself innovative.

The analysis of this information allows the public entity to understand essentially two aspects: the first, the identification of the stages of the innovation production process in which there are opportunities for improvement, and the second, its positioning in terms of real and concrete applications of innovation instruments and not only in terms of their adherence to principles or values (which ensures a decrease in the possible gap between knowledge and action).

Innovation processes

The third component presents the results of the self-assessment of entities in terms of four categories: their resources, their practices, their processes and their products relevant to the innovative fields. In total, 19 variables are considered, such as “development of new products or services”, “structures dedicated to experimentation” or “collection of user satisfaction levels”, which can be chosen by the participating entities to confirm their adoption. In addition, it presents the degree of adherence of the entity’s strategy to measures that contribute to these variables.

By analysing the results of their responses in the data viewer, public authorities are able to ascertain a set of learning:

- **Comparative portrait:** they obtain a photograph of their current situation for each of these 19 variables in comparison with the average values presented by the Public Administration (or another term of comparison considered more pertinent, such as the size of the organization);

- **Strengths & weaknesses:** given their visual nature, their strengths and weaknesses become immediately perceptible, allowing the relationship between the intentions or convictions of the public authority (e.g. commitment to the quality of service provided to citizens) and the existence of concrete initiatives to be contrasted;

- **Intervention priorities:** from these readings, it becomes simpler and more sustained to identify and justify the intervention priorities to be adopted, taking into account the objectives in strategic terms (e.g. “If the objective is A, then you have to bet on B”) or the need to overcome the limitations thus signalled (to overcome the gaps in innovation skills, for example).

Organisational environment

The fourth component characterizes the organizational environment of the public entity in eleven critical dimensions for the characterization of advantages, unexploited margins of progress or even voids in terms of innovation strategy. By way of example, we find here considered

the "own budgetary capacity", the "monitoring and evaluation culture" or the existence of a "risk tolerance" culture.

In radar graphs of immediate reading, the public entity is able to visualize the 16 decisive dimensions of its organizational framework and, from a comparative reading of the average scoring thresholds, signal constraints or pre-existing inducers to support innovation within it.

Higher impact innovation

The fifth component signals innovation with the greatest impact, characterising it in six facets that better situate the relative originality of this initiative in comparison with the reality of Public Administration.

- **Origin of the innovation:** it allows to know if it constitutes an absolute originality of this entity, an adaptation inspired by other examples or a replication of an existing solution, in addition to determining if it comes from a migration from the public or private sector;

- **Innovation objective:** it allows to know the priorities targeted by innovation, either in more internal terms (among others, optimization of resources, cost reduction or obtaining procedural efficiencies), or in more external terms (such as recipient satisfaction or increased public transparency);

- **Resources used** in the implementation of the innovation in question: mapping from the use of pre-existing structures or skills to the acquisition of specialized services, through collaboration with the national scientific system, allows one to know the privileged resources to develop the solution;

- **Motivation** for innovation: a knowledge that allows one to know whether this innovation resulted from external political and/ or media pressure or came from user proposals, as well as clarify whether it originated from internal suggestions from employees ("from the bottom up") or from an orientation transmitted by organizational leaders;

- **Mode of evaluation of implementation:** introducing the salient dimension of evaluation for the characterisation of innovation, which makes it possible to consider the extent to which the measurement of results or the accumulation of learning is envisaged or adopted by the public body concerned;

- **Source of funding** for implementation: it provides information on where the budget appropriations come from, for example by clarifying whether they come from own budgets or whether they benefit from Community support.

In addition to supporting the knowledge of one's own reality, this information enables a bank of high-impact innovations to be set up, opening the way for public entities to share information on existing solutions, move towards the replication of solutions that work or develop channels for the transfer of skills through contact with the promoters of innovations

Network of established partnerships

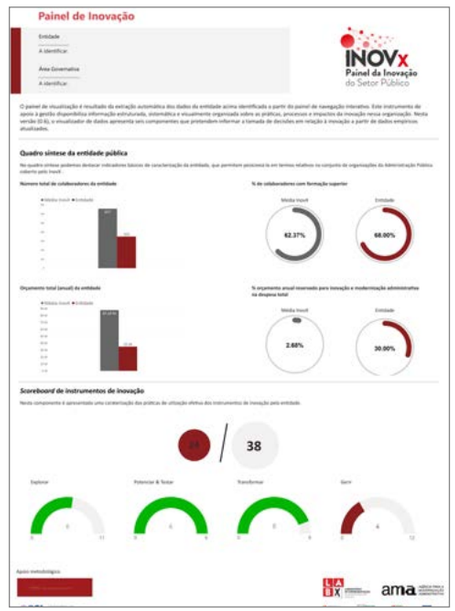
The sixth and final component of the individualized data viewer presents the network of existing partnerships in a given public entity. In a very visual way, the entity is able to register simultaneously the bundles of connections established with the partners of the relevant innovation ecosystem, in particular partners representing the "quadruple helix" (public administration, civil society, community of priorities, scientific system):

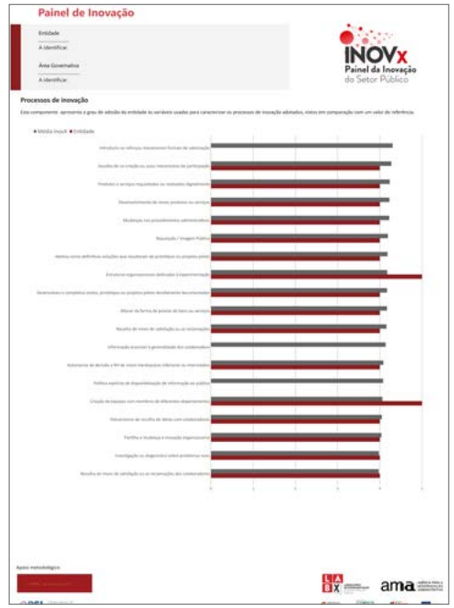
- **Public Administration** (e.g. public institutes, regulators);

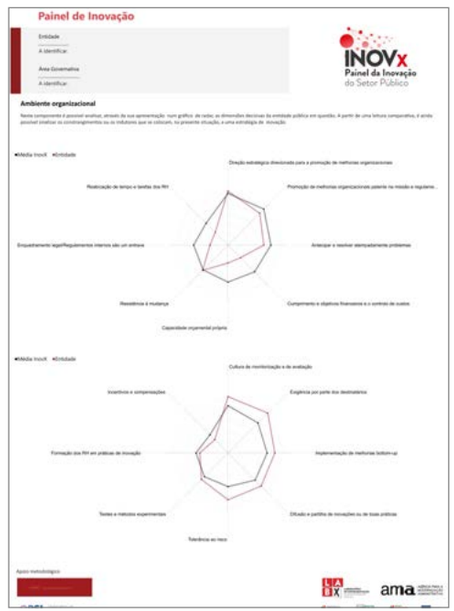
- **Research & Development** (e.g. research centres, consulting companies);
- **Civil society & Community of entrepreneurs** (e.g. business associations, professional associations, trade unions, civil society associations);
- **International networks** (e.g. international reference organisations, networks of innovation organisations on an international scale).

The analysis of this integrated network of partnerships makes it possible to identify the potential universe of the territory of partnerships, the existing connections with the partners and also to signal the absence of connections that can be filled.

Figure 9
Data visualizator prototype

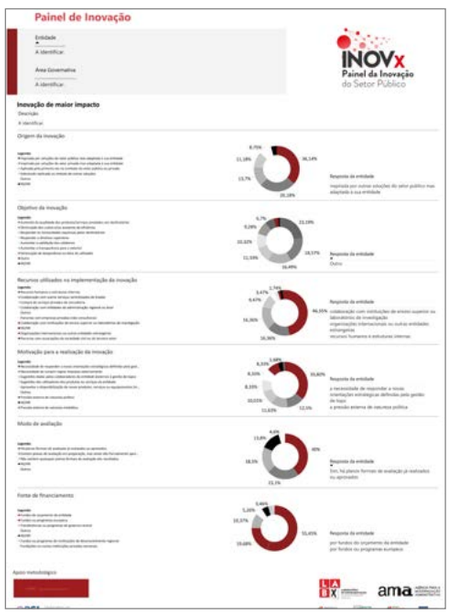


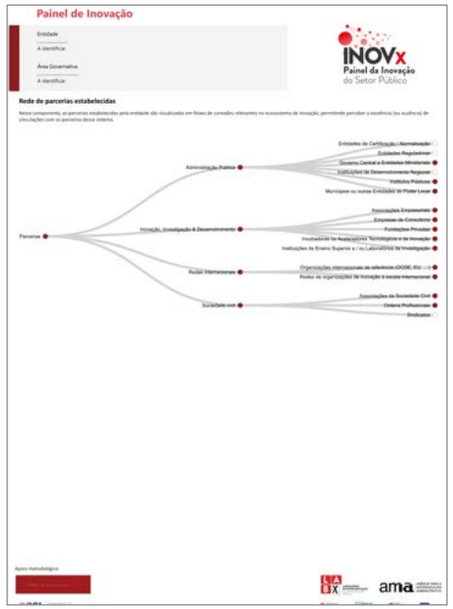




Source: AMA | LabX

Figure 10
Data visualizator prototype





Source: AMA | LabX

xii. **Dashboard**: interactive tool

An **innovation dashboard** was developed, adopting an *evidence based decision making* approach to support public entities in defining their best strategic options (thus acting as a *decision board*) through the presentation of "usable data" (useful, impactful, *insightful*, intuitive) rather than massive or intricate data. This dashboard presents outstanding structural properties in response to needs or challenges detected among its potential users:

- **Visual format:** communicates complex information in a structured, synthetic and visually organized way in order to eliminate or at least lower data literacy barriers and present only the most relevant content to the recipients;

- **Interactive:** The use of an automatic data extractor allows the creation of an interactive dashboard, which the user can set or customize (to choose, for example, the reference value for comparing the results of their organization);

- **Actionable:** the definition of the components and indicators presented by this dashboard included the priorities for concrete action to be taken by the addressees, i.e. the managers and directors of public entities, which expresses the objective of supporting decision making in empirical data;

- **Updated diagnosis:** it allows to obtain a panoramic picture of the Public Administration and an individualized characterization of each public entity in this universe, which allows to add to the potential users of this instrument all the public decision makers with the intention of a vision that is, at the same time, sensitive to different contexts and to the coordination of the whole.

The dashboard is an interactive tool, which allows public authorities to manage innovation in real time to support decision making in empirical data.

When we delivered the individual viewers to the entities, we built a prototype version of the viewer using a "decoy" case, which can be found here. All suggestions, questions and comments are more than welcome.

Figure 11
Navigation Panel Prototype (0.1)

Source: AMA | LabX

E. Main learnings

Resulting from the application of the experimental project in a real context, with its massive collection of information and exhaustive analysis of data, lessons that need to be preserved, shared and submitted to discussion are highlighted:

1. **Relevance of user centrality:** rather than feeding a "pure" search or making the diagnosis an end in itself (by obtaining an index, for example), there was a concern to focus this measurement and monitoring tool on the needs and emergencies of users, ensuring that the results obtained were accessible and actionable by public authorities for their daily activity contexts or by supporting them in defining their strategies for innovation.

2. **The need to combine practices and discourses:** it has proved important to weigh discourses and perceptions about innovation simultaneously with their practices and products in a way that covers the whole spectrum of innovative expressions, be they symbolic or material. The adoption of innovation as an ideology or as a normative narrative among public entities, through the demonstrated agreement on its importance or influence in these organizations, needs to be complemented with an attention to its achievements, at least as a procedure for detecting a gap between knowledge and action. In this sense, the questioning of the effective use of innovation tools has served to see, in addition to the consensus on the importance of innovation in general, the practical applications that occur in initiatives developed by public entities. For its part, the descriptive component of innovation with the greatest impact forced the presentation of tangibilizations of innovation, making it possible to see

the existing (un)balance between idealizations and achievements, and emphasizing the importance of looking at innovation through its demonstrative effects rather than through its promises alone.

3. **Making instruments of action available to the public sector:** from the outset, the purpose of this experimental project was to make an instrument of action available to Portuguese public entities for the definition of their strategies, rather than carrying out a diagnosis or a classification. In this sense, this action tool had to be oriented to respond to the needs, doubts and priorities of public entities in this field; to ensure that it was intelligible and accessible by its users, both in terms of data literacy and data delivery support; and to be able to leverage decisions from robust empirical data. Because they don't have to be disinterested gestures, when we ask public authorities to devote their time once again to sharing data and contributing responses, we have to offer an outcome that interests organisations. Even if it is less sophisticated and less exhaustive than it might be from the experts' point of view, it must respond to needs or provide means that prove useful.

4. **Advantages of the experimentation process:** more than just betting on the accumulation of theoretical knowledge, this project bet on the importance of assuming an experimental configuration, with a previous exploration, iteration mechanisms and a controlled environment to mitigate potential risks and allow the assimilation of learning from "mistakes". The contributions of the application of this experimental project contribute to make the next steps less speculative and, on the contrary, sustained by the learning of this previous application. Its experimental nature meant that, although on a controlled scale, calibrated responses to the context were developed to control and circumvent the difficulties encountered in this first stage and a more realistic and rigorous management of the efforts required for subsequent applications of this innovation tool was fine-tuned.

5. **Accessory results:** throughout this process of experimentation, which required adapting to the Portuguese context or developing from scratch responses to the challenges that were emerging, ancillary advantages were obtained, such as the creation of replicable and disseminable instruments, which now constitute an arsenal of interest to the public sector.

6. **Promoting emulation:** rather than stimulating competition among individual organizations, blind comparison with the private sector or levelling innovation in a one-dimensional hierarchy (for example, as a ranking), the formats adopted for data presentation aim to promote emulation by placing the public entity among the set of Public Administration organizations, allowing readings in multiple dimensions of innovation;

7. **Availability and handling of data usable in public policy:** to repeat an idea underlying this whole experimental project, rather than a stunning accumulation of data or the development of a numerical artefact, the aim was to build a way of making applicable, accessible, relevant and appropriate information on innovation available to the context of use by public authorities. For decision-makers and managers, there is an opportunity to enunciate and coordinate public policies or strategies on innovation that are supported in reality (*evidence-based policymaking*).

8. **Contextual diagnoses by individual entity:** The opportunity to carry out a synchronous diagnosis for

a panoramic view of the Public Administration at a given moment in time is followed by the provision of an instrument to support innovation management on the scale of the public entities themselves. In this way, public entities can identify strengths and weaknesses in their organisation, detect gaps and deviations from their declared objectives, or map opportunities hitherto latent in their innovation activities. In this way, the presentation of a first diagnostic report can not only be continued by an interactive use of a data platform, but also give rise to collaborations and partnerships for the creation of in-depth case studies, with close monitoring for each public entity requesting such technical assistance.

9. **Establishing benchmarks to measure changes over time:** the need to measure progress of innovation over time - or the effects obtained by incentive policy measures or by changes in the conjunctures of the public administration - requires the establishment of values that serve as terms of comparison (in extreme cases, via A/B tests);

10. **Mapping the process of producing innovation through the use of instruments:** mapping innovation tools allows not only an awareness of the materialization of innovation in the concrete projects it develops (for example, in comparison with idealization, existing beliefs), but also ensures a better alignment between the strategy and the objectives, on the one hand, and the means used to achieve them, detecting handicaps or opportunities for acceleration, on the other;

11. **Looking at what works:** the possibility of completing the overall description of the public authority with a detailed study of a major innovation allows the knowledge threshold made available by the generic data to be exceeded with the dense and concrete information of a successful case. On the other hand, it guarantees the constitution of a bank of good practices and concrete cases on what works.

12. **Continuous improvement paradigm:** the logic of creating innovation shows that one is dealing with an uninterrupted process, to which one can give energy throughout its successive stages. In this way, evaluation does not appear as the end, of an innovative initiative, but as a means or a transition to its continued development.

13. **Replace the vernacular:** no one should have a specific course to understand or appropriate the data, and the information made available to public authorities could infiltrate yet another logic of change (and less terminology) in relation to public innovation.

14. **Satisfying different user profiles:** Nevertheless, a multitude of potential users should be envisaged, obviously including the leaders and managers of public bodies, but also political leaders or, at another level of responsibility, the heads of the different departments or the specialised teams for innovation or measuring the quality of an organisation. In addition, use by other partners can be considered, starting with the scientific community which can use this data to progress existing knowledge about the public sector. Finally, there is the opportunity to make publicly available to citizens a set of relevant indicators on public innovation, ensuring alignment with the principles of open and accountable innovation.

15. **Providing an inducer of change by itself:** the results presented by this experimental project may be a *nudge*, as it is not anodyne in its consequences. As soon as certain data are requested or certain variables of innovation are highlighted

in the eyes of public entities, this instrument has the capacity to act as an instigator of change. In fact, this model of innovation is not intended to be a neutral version of public innovation; on the contrary, it seeks to promote a notion of innovation that is focused on the needs of citizens, open, collaborative and with an experimental and iterative nature.

16. **The need to stabilise the measurement process, making it an integral part of normality.** Not only because there was a primitive accumulation of knowledge that now allows consolidation and more intensive use, but also because the energy needed for ignition is disproportionate to be applied repeatedly at restarts, there is all the advantage of considering existing ways to stabilise this assessment exercise. More important than using one or another particular method or instrument, it is essential to promote a culture of measurement and evaluation in a sustained manner by the Public Administration.

17. **Advantage of taking advantage of existing administrative data, wavering unnecessary effort and boosting data cross-checking.** The ideal would be to be able to use existing administrative data, which would reduce the effort required from public entities in providing answers and, at the same time, would enhance the cross-referencing of data, ensuring the possession of information from other reliable sources for the extension of knowledge held and the cross-validation of data.

F. Near future

The results of the experimental project allow us to envisage the development of future initiatives for the implementation of the project, in particular to overcome the obstacles identified or to take advantage of latent opportunities. Looking at the short-term feasibility, we can immediately think about exploring applications of the knowledge and instruments created in the meantime:

- **Varying the scale:** case studies can be considered where the universe of application is the internal departments or administrative divisions of a single public entity of the Public Administration, in order to think about innovation strategies at the micro scale of organizations;

- **Preparing thematic dossiers:** through the information made available by public entities, it is possible to generate thematic dossiers on specific areas of the whole Public Administration or of a single organisation, guiding and informing the decisions to be taken in relation to those particular themes (among many others, the panorama of the use of innovation instruments or the diagnosis of human resources and innovation skills).

- **Target profiles:** the modulation of the information to be made available can be considered taking into account the different profiles of potential stakeholders, from policy makers to scientific experts, from public managers to heads of technical teams in Public Administration.

The opportunity arose to take advantage of the support given to the Agency for Administration Modernization at the *INOVAPA: Innovation and Open Public Administration* operation (Notice 05

/ SAMA 2020 / 2019) to consolidate the results of this experimental project through the creation of the Observatory for Innovation and Experimentation in Public Services, over the years 2020 and 2021. In this way, a new horizon of activities emerges:

- **To produce revised and stable versions of the theoretical-methodological package:** to take advantage of the coming months to consolidate learning, to continue the study of empirical materials, to assemble the structure of the methodological team and to improve the heuristic scheme and the research tools. Given the lines of action defined by the new edition of the Public Management Innovation Incentive System (SIIGeP) for 2020, there is the possibility of adapting this exercise to the specific context of public services (*Measure 21: Observatory for Innovation and Experimentation in Public Services*);
- **Observatory for Innovation and Experimentation in Public Services:** the emergence of this initiative will make it possible, from the outset, to think about an application of the activities of modelling, diagnosis and provision of a dashboard throughout the years 2020 and 2021 in a regime of consolidation and wide dissemination.

In this way, we avoid wasting the experimental experience that has been accumulated in the meantime and, what's more, we can support the multiple appropriations and uses that this dashboard has in power. The development of a diagnostic and navigation instrument must find its corollary in its effective application in the service of the common good.

LABORATÓRIO DE EXPERIMENTAÇÃO DA ADMINISTRAÇÃO

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