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Scientific articles

SoporteBalance: un sistema de información para la coordinación de solicitudes de soporte y supervisión operativa con enfoque en gobierno digital

SoporteBalance: an information system for coordinating support requests and operational supervision with a focus on digital government

SoporteBalance: um sistema de informação para coordenar pedidos de apoio e monitorizar operações com foco no governo digital

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Resumen

Esta investigación presenta el diseño e implementación de SoporteBalance, un sistema de información para la gestión integral de solicitudes de soporte técnico y la evaluación del desempeño del personal, bajo un enfoque de gobierno digital.

SoporteBalance optimiza la asignación de recursos, mejora los tiempos de respuesta y promueve la equidad en la distribución de cargas laborales dentro de la Procuraduría Social de la Ciudad de México, garantizando una prestación de servicios eficiente, efectiva y transparente. Su desarrollo siguió una metodología de prototipado, incorporando funciones de registro, seguimiento y cierre de tickets, asignación automática de tareas según carga

laboral y generación de reportes de desempeño. Entre los resultados, destaca la reducción de tiempos de atención, el mejor aprovechamiento de los recursos tecnológicos y el fortalecimiento de la trazabilidad de incidentes. SoporteBalance se consolida como una herramienta estratégica para modernizar la gestión de gobierno digital, fomentar la transparencia y mejorar la calidad del servicio, siendo además un modelo replicable para otras entidades públicas.

Palabras clave: Sistema de información, soporte técnico, coordinación operativa, gobierno digital, supervisión operativa.

Abstract

This research presents the design and implementation of SoporteBalance, an information system for the comprehensive management of technical support requests and staff performance evaluation, based on a digital government approach.

The system optimizes resource allocation, improves response times, and promotes equity in the distribution of workloads within the Social Prosecutor's Office of Mexico City, ensuring efficient, effective, and transparent service delivery. Its development followed a prototyping methodology, incorporating ticket registration, tracking, and closure functions, automatic task assignment based on workload, and performance report generation. Among the results, the reduction in response times, the better use of technological resources, and the strengthening of incident traceability stand out. SoporteBalance has been positioned as a strategic tool for modernizing digital government management, promoting transparency, and improving service quality, as well as being a replicable model for other public entities.

Keywords: Information system, technical support, operational coordination, digital government, operational oversight.

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Resumo

Esta pesquisa apresenta o projeto e a implementação do SoporteBalance, um sistema de informação para a gestão integral de solicitações de suporte técnico e a avaliação do desempenho da equipe, sob uma abordagem de governo digital.

O SoporteBalance otimiza a alocação de recursos, melhora os tempos de resposta e promove a equidade na distribuição de cargas de trabalho no âmbito da Procuradoria Social da Cidade do México, garantindo a prestação de serviços eficiente, eficaz y transparente. Seu desenvolvimento seguiu uma metodologia de prototipagem, incorporando funções para registro, acompanhamento e encerramento de chamados, atribuição automática de tarefas com base na carga de trabalho e geração de relatórios de desempenho. Entre os resultados, destacam-se a redução nos tempos de resposta, a melhoria no uso de recursos tecnológicos e o fortalecimento da rastreabilidade de incidentes. O SoporteBalance se consolida como uma ferramenta estratégica para a modernização da gestão do governo digital, fomentando a transparência e aprimorando a qualidade dos serviços, além de ser um modelo replicável para outras entidades públicas.

Palavras-chave: Sistema de informação, suporte técnico, coordenação operacional, governo digital, supervisão operacional.

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Introduction

Da Silva (2024) defines a support *ticket* as a report submitted by a user to request the execution of a task within an organizational system, with the purpose of achieving a specific objective. This mechanism allows for the traceability of user interactions, facilitating the management and detection of their requests more easily and quickly. Furthermore, tickets can be used for various types of user support, such as incident logging, information delivery, receiving complaints or comments, and opening service requests. Each ticket records relevant details of the technical service, including date, time, and agreements reached, among other relevant elements.

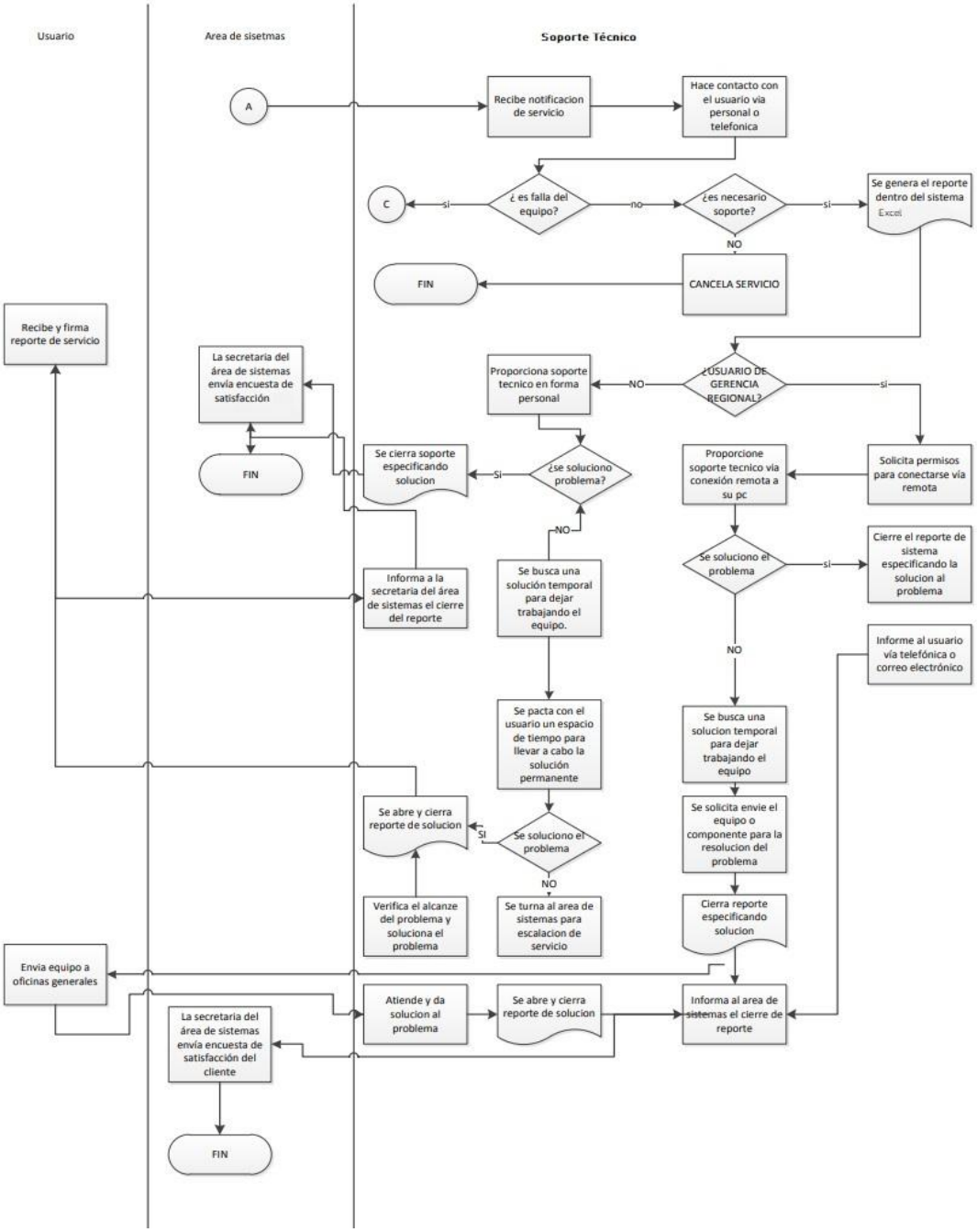
When reviewing some tools used for ticket management, Remedy BMC ITSM (2023) stands out for its ability to handle multiple requests simultaneously. This platform includes specific modules for managing incidents and requests, such as BMC Remedy Incident Manager and BMC Remedy Change Management. OsTicket, described by Realhost (2023),

is a simple option for quickly addressing and resolving reported incidents. Kayako (2023) is presented as a solution that integrates multichannel communications and centralizes user information to facilitate staff work. This contributes to improved productivity and fosters customer loyalty. However, these tools often have significant limitations. For example, many only allow users to initiate and close requests, without offering control over resolution times, which hinders efficient management. This lack of functionality highlights the need to develop an information system that includes options for managing and monitoring the time spent on each incident. A system with these features would be more adaptable and effective, allowing for better incident control and optimizing user support. This research will analyze different proposals and methodologies aimed at improving these aspects, also considering software engineering techniques, especially reengineering. Casas (2004) points out that this discipline provides procedures for improving existing systems, optimizing their operation. A fundamental aspect of systems implementation is the design phase. If this stage is not addressed adequately, risks, delays, and additional costs can arise, affecting the quality of the final service. Casas (2004) warns that the new illiterates or ignorant of the 21st century will be those who do not have access to new technologies. In other words, technological exclusion can leave large sectors of society behind.

Therefore, it is essential to understand that digital government represents a historic opportunity to improve the efficiency and transparency of public administration. However, this process faces a critical barrier that goes beyond technological infrastructure: functional digital illiteracy. This concept transcends the mere lack of access to devices; it refers to the inability of institutional actors to interpret, manage, and strategically use digital information in their daily processes. For digital transformation to be genuinely inclusive and sustainable, it is imperative to develop solutions that not only automate tasks but also strengthen the digital skills of public servants.

In this context, the SoporteBalance information system was designed as a tool to reduce these gaps. It is conceived as a dual-purpose tool: on the one hand, it optimizes workflows, and on the other, it functions as a contextual learning environment that, by structuring and simplifying interaction with operational data, empowers users and actively mitigates digital literacy gaps within institutions. Thus, this research contributes to a digital governance approach that intertwines technological development with the growth of human capabilities, laying a more solid foundation for social and cultural progress globally.

Figure 1. UML activity diagram of manual processes.



Source: Own

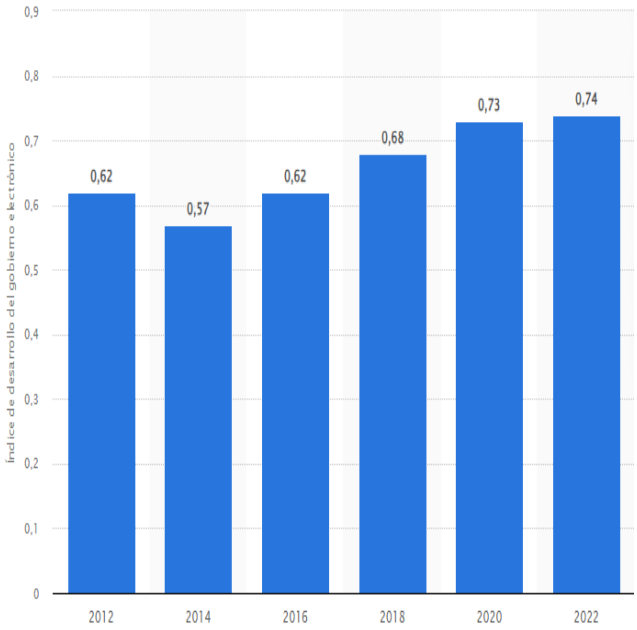
As observed and illustrated in Figure 1, the administrative and technical staff of the Information and Communication Technologies (ICT) department receive support requests through multiple channels, including email, instant messaging applications, telephone calls, and in-person assistance. While this multichannel approach allows users access to the service, it lacks a centralized registration and control mechanism. Upon receiving a request, the user is asked to complete a physical form, which must be

printed and submitted to document receipt of the request and the responsible party's custody of the resource. Subsequently, the General Services area, responsible for operational technical support, receives these forms either in person or via email. The technical staff reviews the request, assesses the scope of the incident, and addresses it. In cases where an immediate solution is not possible, a time is scheduled with the user for resolution. Once the issue is resolved, the technician completes the form and closes the report, specifying the solution applied. However, this service flow operates under a predominantly manual approach, relying solely on spreadsheet software for data entry, which limits traceability and the consolidation of reliable data. As a consequence of this operational scheme, several problems arise in managing requests. The dispersion of information across emails, physical forms, and separate files hinders prioritization, timely case follow-up, and access to historical request records. Furthermore, generating reports by department, user, or service status requires manual data collection, increasing administrative time and reducing process efficiency. Additionally, through observation of the technical staff's daily work, imbalances in workloads and significant variations in response times among technicians on duty were identified. This situation leads to delays in responding to users, dissatisfaction with requests lacking adequate follow-up, and a negative perception of the service provided by the ICT department. This is compounded by the limitation stemming from a lack of staff with sufficient skills to efficiently handle basic support processes, which directly impacts the quality of service and highlights the need for mechanisms to organize, control, and optimize the management of requests within a digital government approach.

Justification

The advancement of ICT is driving a significant evolution in public administration, giving rise to what is known as digital government. This transformation improves response times for various administrative procedures and facilitates more direct communication with users. Currently, access to public services via the internet, web portals, or any remote server allows citizens to carry out procedures from their homes without needing to physically visit government offices. It is important to highlight that the 2030 Agenda for Sustainable Development has incorporated the dissemination of ICT and global interconnection as key elements for accelerating territorial growth and closing the digital divide. This fosters the evolution of knowledge communities and underscores the importance that ICT and digital government will have in the transformation of the public sector worldwide. According to the United Nations (UN) semi-annual report on digital government, there is global progress toward the implementation of technological solutions that seek to improve priority areas such as education, health, the environment, and employment. In this context, the Digital Government Index evaluates 193 countries, measuring aspects such as the provision of online government services, telecommunications infrastructure, and human capital development. As shown in Figure 2, Mexico obtained a score of 0.68 on this index in 2018, where one represents the maximum possible value, placing it 64th globally. In comparison, in 2016 its score was 0.62, ranking 59th. This represents a 10.1% improvement in two years and a jump of five positions in the global ranking. However, other countries are showing faster rates of progress. Turkey, which ranked 68th in 2016, rose to 53rd in 2018, surpassing Mexico by eleven positions, as illustrated in Figure 3. This suggests that, although Mexico has improved, international competition to expand digital government is becoming increasingly dynamic and challenging.

Figure 2. Government Development Index
Electronic Government in Mexico; 2012-2022



Source: (Statista Research Department, 2023)

Figure 3. Top 5 OECD countries in the
Digital Government Index Ranking

País	Lugar en el Ranking Mundial	Índice de e-Gobierno
Dinamarca	1	0.915
Australia	2	0.905
Corea	3	0.901
Reino Unido	4	0.899
Suecia	5	0.888
Eslovaquia	49	0.716
Turquía	53	0.711
República Checa	54	0.708
Letonia	57	0.699
México	64	0.682

Source: (Statista Research Department, 2023)

As mentioned above, the index ranks Mexico 64th out of the 193 territories that make up the United Nations (2024). When compared to the 33 Latin American and Caribbean economies included in the list, it ranks among the top 10 regional performers (although it is

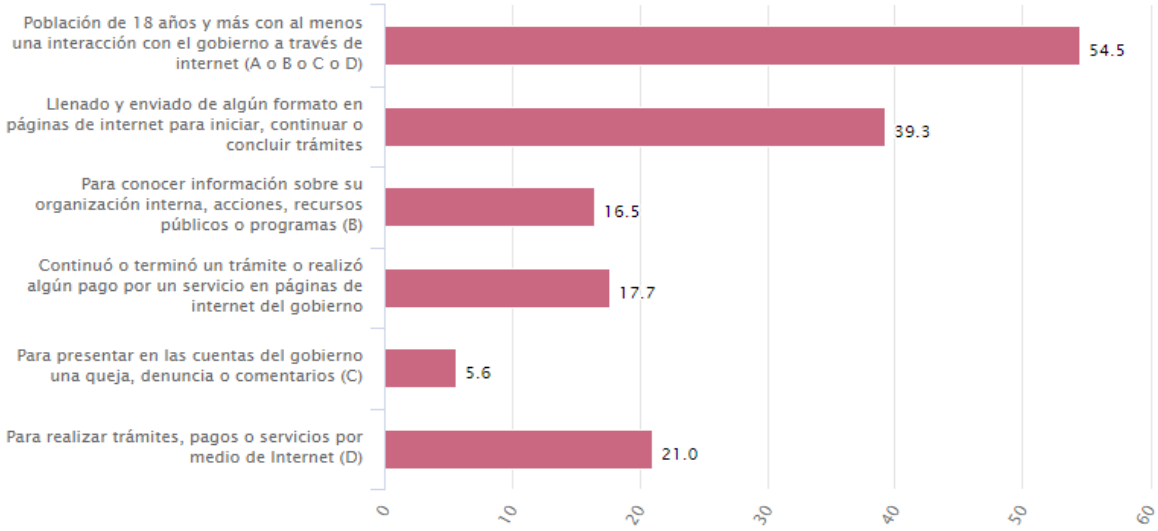
30 places below Uruguay in the overall ranking). However, when compared to the 36 territories that comprised the Organization for Economic Co-operation and Development (OECD) in 2018, Mexico ranks last, far behind Denmark, Australia, and South Korea, which occupy the top three positions internationally.

The results of surveys conducted in 2020 reveal a low valuation of digital services by users in various geographic regions, territories, and cities. While progress has been made in adopting data-driven engagement approaches and strengthening technological skills, these efforts have not yet consistently translated into a positive perception of the digital services offered. This situation is conditioned by the persistence of structural and operational obstacles that limit the advancement of digital government. Among the main challenges are the risks associated with cybersecurity and data privacy protection, as well as insufficient financial, technical, and human resources to implement and sustain digital reforms. These difficulties are particularly critical in territories undergoing transformation or with specific contextual conditions, where technological infrastructure and institutional capacities remain limited. Consequently, the need to strengthen technological infrastructure and consolidate sustainable, functional, and secure digital government platforms, capable of responding to user demands and generating trust in digital public services, is evident. While some territories have reached advanced levels of digital maturity, in others the incorporation of technologies continues to be incipient within national agendas.

National Survey of Government Quality and Impact (ENCIG) 2021

See Figure 4, where the 2021 National Survey on Government Quality and Impact, conducted from November 1 to December 16, 2021, can be graphically visualized. Its purpose is to gather information on the perceptions and experiences of users in procedures and public services provided by the different levels of government, including public safety and justice services; to support decision-making characteristics in public policy.

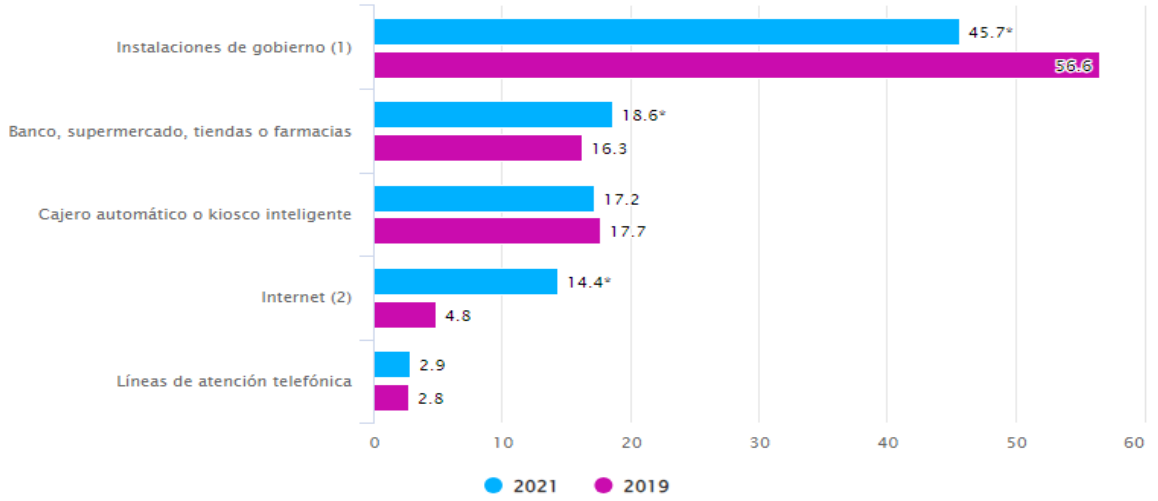
Figure 4. National Survey of Government Quality and Impact



Source: (ENCIG, 2021)

In In comparison with 2019, in 2021 the percentage of citizens who attended public facilities to carry out some procedure, payment or request decreased by ten points nine percentage points, see graphically in Figure 5 how it went from 56.6% to 45.7%, while those citizens who used the internet increased by 9.6 percentage points.

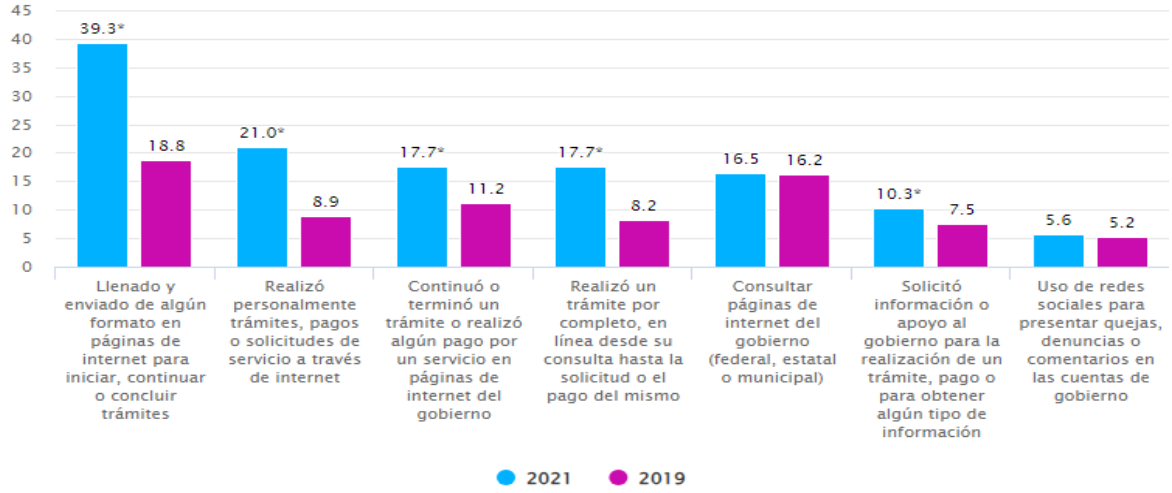
Figure 5. The type of place visited or means by which the payment, procedure or service request was made (percentage) 2019 - 2021



Source: (ENCIG, 2021)

As shown in the graph in Figure 6, in 2021, 39.3% of citizens over 18 years of age who interacted with public services through the internet did so to fill out and digitally submit forms to begin, continue, and complete a procedure.

Figure 6. Interaction with the government via the internet (percentage) 2019 – 2021



Source: (ENCIG, 2021)

The use of ICT in organizations for monitoring, evaluation and updating

Castells (2010) states that a network community is one whose social organization is comprised of networks driven by digital information and communication technologies, based on microelectronics. In this network community, sovereignty is determined by its capacity to link and plan networks, and ultimately by its management and communication skills within the framework of technologically enabled networks. Technology is not the network itself, nor is it the communication, but networks, communications, and, above all, the role of the central office, as we understand them today, would be incomprehensible without new ICT. Currently, organizations use constant *monitoring* to ensure the proper functioning of information systems and to detect any anomalies or security risks early on. By reporting potential failures in network services, software, hardware, etc., as well as by analyzing traffic behavior, optimal and efficient operation is achieved, consequently offering better service to the user. It is worth mentioning that important elements to be monitored must be taken into account, as well as specialized tools used for specific tasks. Evaluation refers to the systematic and precise study of a public initiative aimed at determining its suitability and the achievement of its mission and vision. The updating processes *include understanding* the solutions, adhering to the planned schedule and managing allocated resources, identifying shortcomings in the project concept, and implementing modifications if necessary. Updating, evaluation, and monitoring help determine the most effective and efficient use of resources, as these are essential for achieving the defined goals regarding the perceived success of the

implementations. Therefore, information systems constantly prioritize tasks, as they must be efficient and capable of resolving issues at any time and in any situation, preventing future setbacks. According to Figure 7, which illustrates the monitoring and evaluation processes used to identify whether the information system's dedication is having a significant impact on the visualized results that have been successfully implemented, an information system is understood to be a set of constantly interacting elements that function as a whole, allowing us to automatically store, process, and retrieve data to achieve a common goal. It is necessary to assist administrators, managers, programmers, engineers, technicians, and users in obtaining the information and knowledge they need to make decisions about planned operations. Monitoring information systems is becoming increasingly essential for managing a digital government infrastructure and focusing on achieving some of the following objectives:

• To fully exploit the hardware and software resources of a company.
• To prevent problems and detect issues.
• Warn of possible future incidents.
• Cost reduction.
• Reduction in times.
• Improve the quality of customer service.

The monitoring process consists of different stages, such as the following:

• Description of goals and objectives.
• Collection of user information (sample).
• Alerts on important data, conversations, or arguments.
• Definition of parameters and scope.
• Selection of tools.
• Monitoring and evaluation of processes.

Figure 7. Illustrative example of monitoring and evaluation.

Source: Image for illustrative use

Continuing with the aforementioned, the transformation and establishment of ICT have compelled countries to evolve and conduct thorough evaluations of their governance to avoid falling behind. The United States is a territory experiencing constant technological, economic, political, and social growth, from which many of the foundations for a well-organized digital government can be drawn, incorporating some Anglo-Saxon (old British) concepts that will contribute to its continued success. Following this, a series of reforms are on the horizon, not only in the United States but also in other developing countries, with the aim of disseminating these reforms to developing nations. This will provide semi-developed territories with a wide range of opportunities for growth and enable them to compete in a new way through the use of technology. Governments at all levels are utilizing ICT as a network to provide information and improved services to citizens, workers, and businesses via the internet. Digital government refers to the implementation of internet and network technologies to digitally connect government and public sector businesses with users, administrators, and other levels of government. Furthermore, by increasing the use of government services, digital government improves the efficiency of government processes and empowers users to access information more freely, along with the ability to communicate with other users electronically through technological networks. Information systems automate many tasks in service processes that were previously performed manually, such as confirming the user's name, type of support, the engineer responsible for the solution, and details of the relevant department. However, it is necessary to automate the aspects of these processes that impact the time, workload, effort, quality, and service provided by government agencies. Moving on to another point, and finally...

Proposed approach

In the 21st century, government agencies have been refining their rules and structures to adapt to constant changes and developments, which are known as ICT (Information and Communication Technologies). Given that ICT are necessary for government communities to provide higher quality services to their users, this renewal can be integrated under the umbrella of Digital Government. The emergence of Digital Government represents a significant leap forward in how government decisions are organized and implemented, allowing for faster and more efficient execution and thus achieving higher quality service for users. As they rightly point out.

Piaggesi and Mokyr (2005) define digital government as:

The ability of governments to offer services digitally and improve public administration, achieving greater competition and quality in the services offered to citizens, in a more transparent environment than the current one, and not limited solely to conventional technological processes. In this sense, it is worth highlighting that the integrated efficiency that arises from establishing appropriate channels of collaboration between public and private organizations is viable in Mexico thanks to the transformation generated by digital government.

Preliminary Methodological Design

For the development of the proposed system, the prototyping methodology will be adopted, which consists of creating preliminary versions or prototypes of the final product. This strategy facilitates the understanding of the requirements and improves communication between developers and users.

- Analysis of quantitative and qualitative variables, related to the incident process in support reports, to understand the most relevant aspects of the current system.
- Specification of functional requirements, identifying the key functionalities that the system must have to meet the needs of the users and fulfill the objectives of the project.
- Analysis of the information system architecture, focused on the planning, monitoring and control of the resources necessary for the efficient operation of the system.

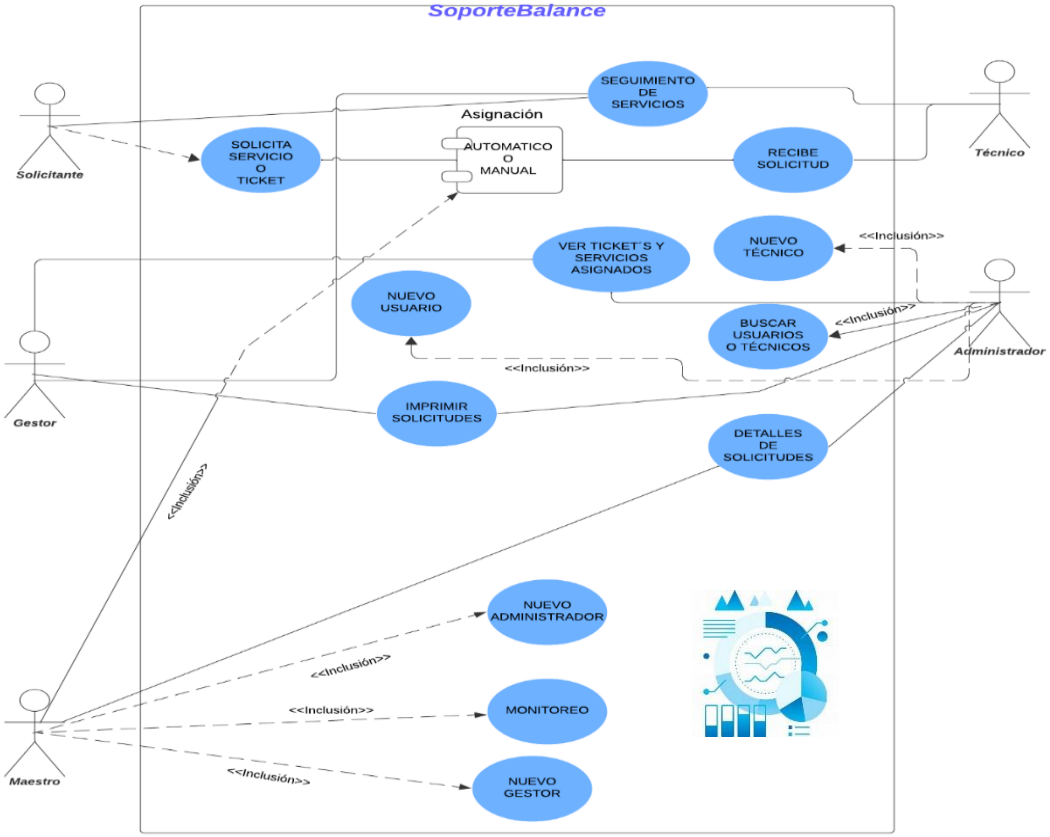
- Design of the proposed system architecture, establishing a solid structure that allows the integration of the different components and facilitates the scalability and maintenance of the system.
- Implementation of the proposed system, developing the necessary modules according to the established requirements, using appropriate technologies to guarantee the performance and security of the system.
- User experience analysis, to empirically validate the prototype and gather evidence on its performance, a data collection instrument structured in a ten-question questionnaire was implemented, see Annex A. This questionnaire was applied to a sample of internal and external users of the institution who interacted with the prototype during the testing phase.
- Conclusions, presenting a summary of the findings and results obtained, as well as proposing areas for improvement and possible directions for future research or expansion of the system.

Table 1. Description of actors

Applicant	He is responsible for reporting technical problems and support requests (tickets and services).
Technical	He is responsible for resolving technical support requests in accordance with established procedures (tickets and services).
Manager	He is responsible for supervising, supporting, and coordinating the activities of the technical team. He prioritizes requests based on urgency and impact.
Administrator	This person is responsible for managing the technological infrastructure and resources necessary for support. They also ensure the integrity and security of the support information.
Teacher	This role involves monitoring, evaluating, and overseeing the overall staff strategy, as well as establishing policies and procedures to improve the efficiency and quality of support.

Source: Own

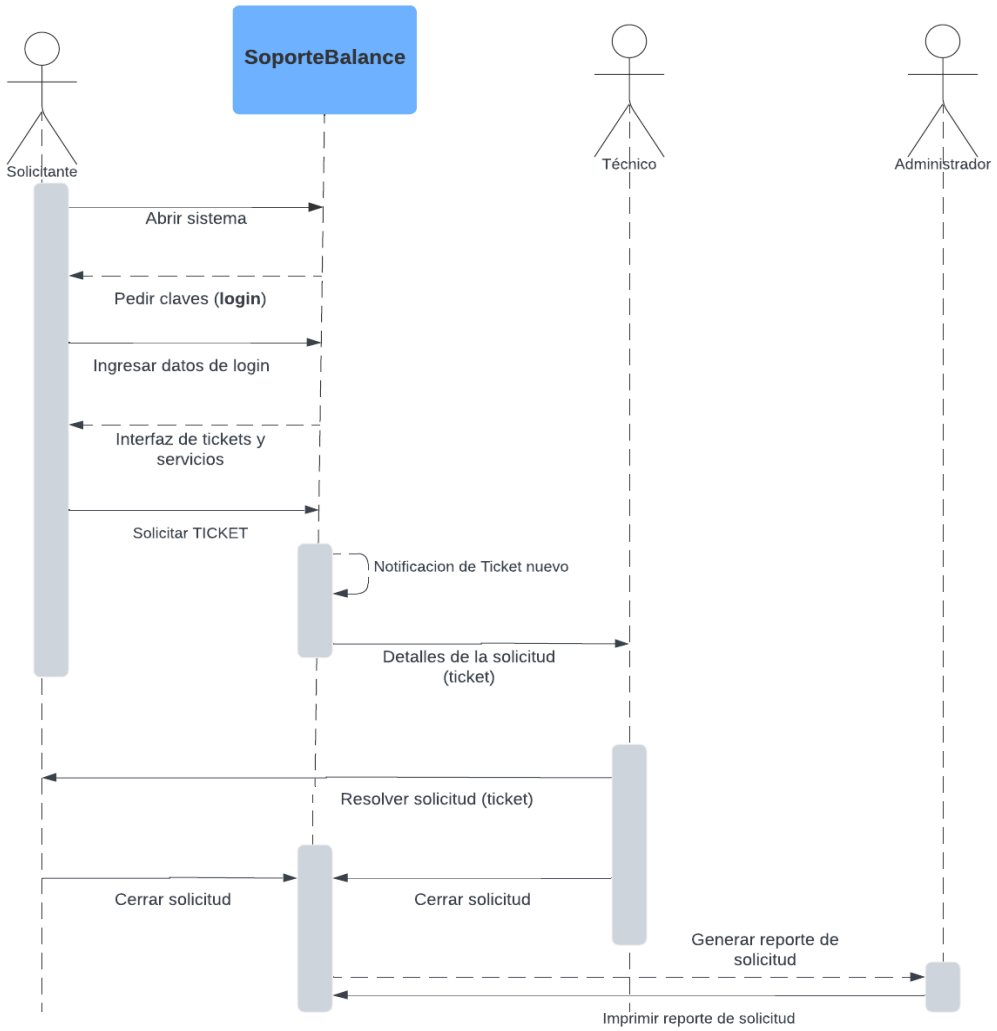
Figure 8. Use case diagram of the information system for the automatic monitoring, assignment, and coordination of a support request



Source: Own

The SoporteBalance use case diagram (Figure 8) illustrates how different users interact with the system. Five main actors are identified: Requester, who registers tickets; Technician, who receives and handles requests; Administrator, who manages users and services; Manager, who supervises requests; and Master, with control and monitoring privileges. Key functions include ticket creation, automatic or manual assignment, querying services and request details, and managing roles (Requester, Technician, Manager, Administrator, and Master). Operations such as searching for staff, printing reports, and general staff monitoring are also included. This model summarizes the responsibilities of each role and the dynamics of interaction between them.

Figure 9. Sequence diagram, activity flow



Source: Own

The SoporteBalance sequence diagram (Figure 9) illustrates the general process for handling a support ticket. The requester accesses the system, logs in, and submits the request. The system generates the ticket and notifies the technician, who receives the details and proceeds to resolve the issue. Once the request is resolved, it is closed, and the administrator can generate and print a report for monitoring and tracking purposes. This flow reflects the lifecycle of a ticket, from its creation to its formal closure.

Functional Requirements

- The system will allow the creation, tracking, and closure of support tickets, assigning each request a unique identifier to facilitate its traceability.
- Tickets can be assigned to technicians automatically or manually, considering criteria such as the lowest available workload, in order to optimize task distribution.
- The system will include a technology resource inventory management module, allowing the management of equipment such as computers, printers, CPUs, and other technological assets.
- For each resource, the system must record relevant information, including status, location, acquisition date, maintenance history, and assignment to specific users.
- The system will generate statistical and analytical reports on the performance of the support area, such as: number of tickets handled per period (weekly, monthly and annually), response and resolution times, and the status of requests.
- Administrators will be able to manage user accounts, including applicants, technicians, and staff with administrative roles.
- The system will send automatic notifications within the platform for relevant events, such as the creation of a ticket, status updates, or its closure.
- The calculation and real-time visualization of the workload assigned to each technician will be allowed, facilitating operational supervision.
- The system will record key performance indicators (KPIs) per worker, such as: number of support requests completed, time spent per request, level of goal achievement.
- Based on these indicators, the system will generate individual and group performance reports, aimed at supporting administrative decision-making.
- The system will be able to detect possible delays or unproductive downtime, allowing for the evaluation of staff operational efficiency.
- Alerts or notifications will be issued when a request is at risk of missing the established deadlines or when significant deviations in performance are detected.
- The reports should be customizable and allow for viewing a complete ticket history.
- The system will offer graphical representations and visual reports (bar, line, or pie charts) that facilitate the interpretation of operational and performance data.

- The system will have a clear and easy-to-use user interface, allowing applicants and technicians to quickly check the status of their applications.

Non-functional requirements

- The system must offer high performance, being able to process a large number of requests with minimal response times.
- The platform must guarantee adequate availability during operating hours, allowing continuous access to the creation and consultation of tickets within the institutional environment.
- The system must have backup and recovery mechanisms that allow information to be restored in case of failures or incidents.
- Access to the platform will be restricted through secure authentication, preventing unauthorized users from entering.
- Passwords and credentials must be stored securely, following good computer security practices.
- The user interface will be intuitive and accessible, taking into account users with different levels of technological competence.
- The system must be responsive, allowing its proper use on desktop computers, tablets, and mobile devices.
- The solution should be easy to maintain and update, allowing for the incorporation of improvements without affecting its overall operation.

Results

To evaluate the impact of the SoporteBalance prototype in a controlled environment, the processes of receiving, assigning, and resolving technical support requests were simulated. The data obtained were organized to compare the performance of the proposed system against the previously documented manual workflow (see Figure 1). The empirical findings derived from this comparison are presented below, considering both operational system indicators and perceptual data obtained through a questionnaire administered to users.

Table 2. Perception of the performance of the information system

Efficiency level	Frequency	Percentage
Very efficient	28	35.9%
Efficient	29	37.2%
Neutral	14	17.9%
Inefficient	5	6.4%
Very inefficient	2	2.6%
Total	78	100%

Source: Own

Regarding perceived efficiency, the results of the questionnaire administered to 78 users show a predominantly positive assessment of the technical support request management system. As shown in Table 2, 73.1% of respondents rated the system as very efficient or efficient for processing requests, while 17.9% remained neutral, and only 9.0% rated it as inefficient or very inefficient. Additionally, based on the records generated by the system during the simulation, a 28% decrease was observed in the average ticket resolution time, measured from assignment to request closure, compared to the previously used manual process.

Furthermore, the automatic assignment algorithm, based on each technician's active workload, allowed for the redistribution of work among the five technicians included in the study area. As shown in Figure 10, the standard deviation of the number of tickets assigned per technician per week decreased from 4.7 in the manual process to 1.2 after the implementation of SoporteBalance. This result reflected a more balanced distribution of tasks, with no technician consistently exceeding the maximum threshold of 8 simultaneous active tickets, established as an operational parameter during the test.

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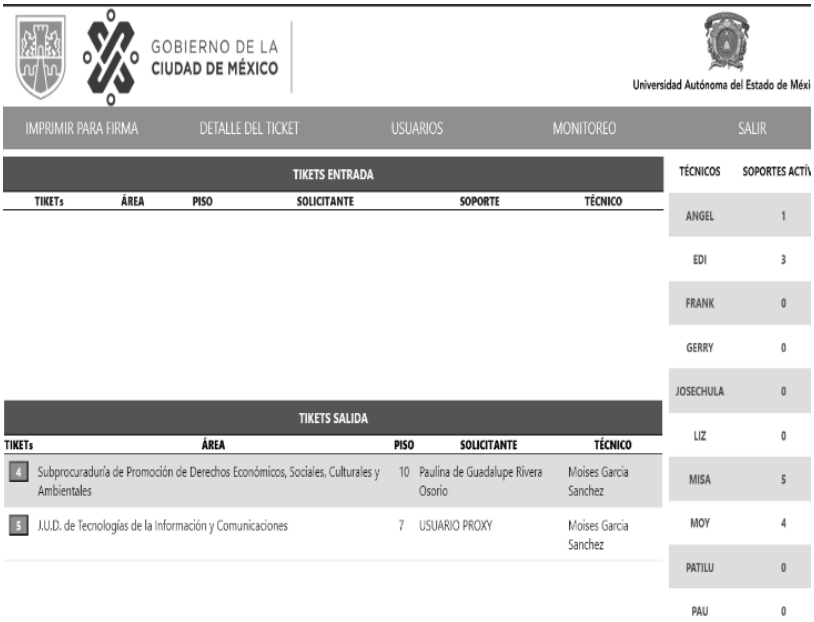
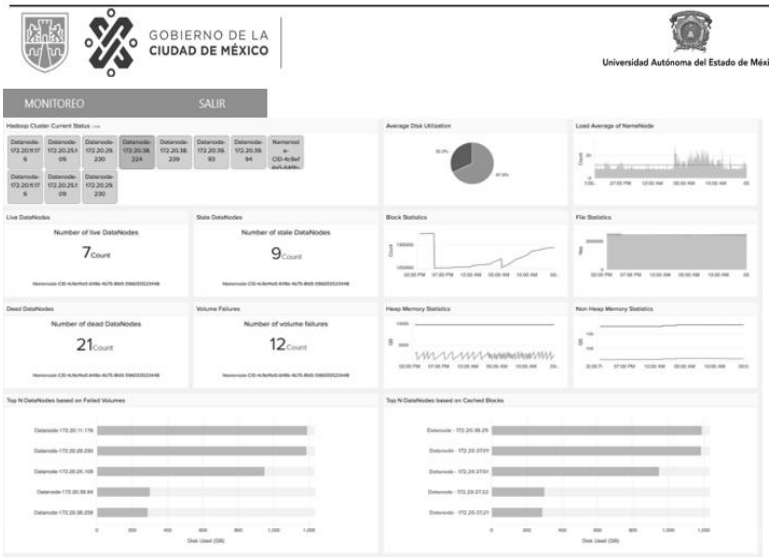
Figure 10. Administrator Interface, view of the control tab to the SoporteBalance system.



Source: Own

Finally, the information system monitoring module, shown in Figure 11, generated continuous data on key performance indicators. During the four-week trial period, 92% of tickets were resolved within the initial estimated timeframe, compared to 67% in the previous manual process.

Figure 11. Master interface, monitoring tab view.



Source: Own

Discussion

The results of this study demonstrate that implementing SoporteBalance significantly increases the efficiency of managing technical support requests in government environments, achieving up to a 28% reduction in response times and optimizing workload distribution. These findings align with previous research in the field of digital government, such as that of Gil García and Pardo (2005), who emphasize that automating administrative processes through information systems is a key factor in streamlining public services and reducing operating costs. Similarly, the automatic assignment of tickets is consistent with recent studies on equitable work balancing (Silicon Valley Journals, 2023), which indicate that a fair distribution of tasks increases productivity and helps reduce workplace stress.

Likewise, the benefits obtained with SoporteBalance coincide with those noted by Pérez et al. (2015), who highlight that e-government in Mexico generates advantages such as operational efficiency, resource savings, transparency, continuous service availability, institutional modernization, and strengthened citizen trust. Complementarily, Sánchez and Reyes (2022), in their study on the "Evolution of e-government and digital economy actions at the federal level in Mexico (2010–2021)," emphasize both the advantages and obstacles faced by public administration when implementing ICT, stressing that the digital transformation of the State is crucial in the context of the Fourth Industrial Revolution.

In contrast to commercial solutions like Remedy or Kayako, which are primarily focused on economic profitability, SoporteBalance distinguishes itself by incorporating a public management approach based on criteria of fairness and transparency. This system emphasizes three fundamental aspects:

- Accountability, guaranteed through real-time auditable records that strengthen transparency in processes.
- Workplace equity, promoted through automation that distributes requests evenly, avoiding overloading staff.
- The integration of a monitoring module that allows tracking staff performance and evaluating the efficiency of handling requests.

These characteristics are consistent with the principles of digital government established by the Organization for Economic Co-operation and Development (OECD, 2024), which promote transparency, operational efficiency and the strengthening of citizen trust in public services.

Limitations

Despite the positive results achieved, SoporteBalance has some limitations that must be acknowledged, such as:

- Dependence on network connectivity, which can affect system availability in case of technical failures.
- Lack of large-scale testing, which limits the validation of performance in high-demand scenarios.
- Limited interoperability with other government platforms, hindering integration into a broader digital ecosystem.
- Need for initial training for users with less experience in digital tools.
- Limitations in scalability, since the current version is designed for a specific institutional environment.
- Limited technological resources in some devices, which may affect the user experience on older equipment.
- Absence of a citizen satisfaction module, which prevents measuring the perception of end users about the service.
- Dependence on internal technical staff, which hinders the sustainability of the system without continuous updating processes.

Conclusions

The implementation of the SoporteBalance system represents a significant innovation in government management at the Social Prosecutor's Office of Mexico City, offering a comprehensive solution that optimizes the coordination and oversight of technical support requests. Designed to centralize the management of technological incidents, this system provides greater transparency and agility in operational processes, aligning with the fundamental principles of digital government. During the system's development and implementation, it was observed that having a specialized information system for incident management significantly improves the responsiveness of the ICT department. Furthermore, it optimizes the use of available resources and contributes to a significant reduction in response times. These benefits not only impact operational efficiency but also strengthen institutional procedures, promoting more organized and reliable management. A key aspect was the use of a robust database for the registration, tracking, and systematic analysis of

requests, which enabled the generation of clear metrics and complete traceability for each case. This information structure is fundamental for implementing continuous improvement processes, an essential aspect of modern public administration. Systematization also facilitates the detection of recurring patterns, allowing for anticipating potential failures and designing preventative solutions.

In addition to its operational benefits, SoporteBalance stands out from other technical support management systems due to its specific adaptation to the institutional needs of the Mexico City Social Prosecutor's Office. Unlike generic platforms, which often require complex configurations or fail to consider the particularities of the public sector, SoporteBalance was designed with a contextualized approach, taking into account the agency's internal regulations, workflows, and authorization levels. This customization facilitates faster adoption and better utilization of technological resources. From a critical perspective, it is important to note that, although commercial systems such as Remedy BMC ITSM or OsTicket offer robust and proven solutions, its adoption in public administration contexts with limited resources, such as those documented in studies on the obstacles to digital government by Sánchez and Reyes (2022), may encounter barriers related to initial investment and the need for specialized technical profiles for its maintenance. SoporteBalance, on the other hand, represents a more accessible and adaptable alternative that allows for the optimization of internal management without sacrificing efficiency or functionality. However, it is recommended to continue evaluating its performance and to implement periodic updates to maintain its technological and operational relevance in the face of the rapid evolution of the digital environment.

Finally, the practical experience with SoporteBalance also highlights the importance of involving end users in the design and improvement of the system, as their direct feedback helps to adjust functionalities and improve the user experience. This participatory approach is key to ensuring that technological solutions not only meet technical objectives but also effectively respond to the real needs of the staff and citizens served.

In summary, SoporteBalance transcends its technical function by consolidating itself as a key tool for the transformation towards a digital government within the Social Prosecutor's Office of Mexico City, promoting an organizational culture oriented towards modernization, transparency and continuous improvement in the field of ICT.

Future updates and improvements

During the development of SoporteBalance, several opportunities for improvement and technological evolution were identified that would further strengthen its functionality, scalability, and alignment with the principles of digital government. SoporteBalance also constitutes a proof of concept that validates the feasibility of developing information systems that prioritize the values of digital government over traditional business paradigms. Future research should:

- Integration with electronic signature systems and institutional validation: To facilitate formal approvals of requests or closure of incidents with legal backing, especially in government environments where traceability and document validation are required.
- Self-help module and intelligent knowledge base: Implement a section of frequently asked questions, quick solutions and internal tutorials, with an intelligent search engine so that users can solve common problems without intervention from the technical area.
- chatbot for initial automated support: Develop a virtual assistant that handles basic requests, automatically logs tickets, and escalates complex cases, freeing support staff from repetitive tasks.
- Impact and urgency-based prioritization system with predictive AI: Automate the assignment of priority levels based on history, user profile, and nature of the request. Machine learning can be used to improve over time.
- Integration with external communication channels (WhatsApp, Telegram, etc.): Allow the creation or tracking of tickets from widely used instant messaging platforms, increasing the accessibility of the system.
- End-user survey and feedback module: Upon closing each ticket, send automatic surveys to evaluate service quality and generate citizen/institutional satisfaction indicators.

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Annex A

Questionnaire on the Information System

1. What is your role in the Social Prosecutor's Office of Mexico City?

- Citizen
- Employee of the Attorney General's Office
- Head of departmental unit
- Other (Specify): _____

2. How often do you use the system to make technical support requests?

- Diary
- Weekly
- Monthly
- Never

3. How would you rate the ease of use of the system for managing your technical support requests?

- Very easy
- Easy
- Neutral
- Difficult
- Very difficult

4. Does the system provide the necessary information to make your technical support request clearly?

- Always
- Sometimes
- Never

5. How efficient do you consider the system to be at processing your technical support requests?

- Very efficient
- Efficient
- Neutral
- Inefficient
- Very inefficient

6. Do you receive clear updates on the status of your technical support requests?

- Always
- Sometimes
- Never

7. Does the staff responsible for resolving your technical support requests communicate clearly and promptly?

- Always
- Sometimes
- Never

8. Do you consider the response time for resolving your support requests to be adequate?

- Very suitable
- Appropriate
- Neutral
- Inappropriate
- Highly inappropriate

9. In general terms, how satisfied are you with the handling of technical support requests through the system?

- Very satisfied
- Satisfied
- Neutral
- Dissatisfied
- Very dissatisfied

10. What aspects of the system do you think should be improved and why?