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# Artificial Intelligence in social services: state of art and potential future developments

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**Abstract.** The aim of this highly theoretical paper is to examine the extent to which Spanish Social Services are adapting to digital technologies. It focuses specifically on the level of presence that artificial intelligence (AI) has in them.
The fundamental contribution of this document lies in the proposal of a model through which to test the presence of AI in Social Services; and, at the same time, to be able to design a strategy for its integration in the different systems. This proposal is built through two vectors: on the one hand, identifying the fundamental activities or moments of social intervention, in addition to access and planning and evaluation of the system; on the other hand, proposing three phases or levels of AI integration, from the one in which there is a greater role for professionals to the one in which it is minimal.
Through the review of the scientific literature, as well as the search for AI implementation initiatives in Social Services, successful experiences are identified that are taking place in Spain and that can be included in some of the areas of the model fields. In this sense, the progress that are being made in this area, often unknown beyond the borders where they are produced or beyond the domain of expertise, are noteworthy, although there are still many steps to be taken, which can only be achieved with decisive public support.
**Keywords:** Social Services; Social Work; Artificial Intelligence; Social Innovation; Digitization.

# [es] La Inteligencia Artificial en los Servicios Sociales: estado de la cuestión y posibles desarrollos futuros

**Resumen.** El trabajo que presentamos, de carácter eminentemente teórico, se propone analizar el grado de adaptación de los Servicios Sociales españoles a las tecnologías digitales, centrándose, específicamente, en el nivel de presencia en ellos de la Inteligencia Artificial (IA).
La aportación fundamental del artículo reside en la propuesta de un modelo a través del cual testar la presencia de la IA en los Servicios Sociales, así como, paralelamente, poder diseñar una estrategia para su integración en los diferentes sistemas. Esta propuesta se construye a través de dos vectores: de una parte, identificando las actividades o momentos fundamentales de la intervención social, además del acceso y la planificación y evaluación del sistema; de otra parte, proponiendo tres fases o niveles de integración de la IA, desde aquella en la que se da un mayor protagonismo de los profesionales a aquella en la que este es mínimo.
A través de la revisión de la literatura científica, así como de la búsqueda de iniciativas de implantación de la IA en los Servicios Sociales, se identifican experiencias exitosas que se están dando en España que pueden incluirse en alguno de los ámbitos del modelo. En este sentido, son de destacar los avances que se están dando en la materia, muchas veces desconocidos más allá de las fronteras donde se producen o del campo de los expertos, aunque todavía resta por dar muchos pasos, que solo podrán darse con un apoyo público decidido.
**Palabras clave:** Servicios Sociales; Trabajo Social, Inteligencia Artificial; Innovación Social, Digitalización.



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## Introduction

The ongoing historical process (known as the "digital era") is marked by the constant development of digital technologies and the Internet (Shepherd, 2004). Against this background, the study of the relationship between information and computer technologies and social services has concentrated primarily on the reflection of two phenomena: the large storage capacity and management of information and, more recently, the virtual intermediation capability as a professional practice tool (Chan and Holosko, 2018). However, the approach that specifically references the role of artificial intelligence in this area is more limited. An example and exception is the well-known work of Milind Tambe and Eric Rice (2018).

Regarding the first approximation, it is undeniable that the transition to the digital society induced by the digital transformation has a clear impact on intervention and research from social work, as it is noted by several American professional associations (NASW, ASWB, CSWE & CSWA, 2017). The issues of the *European Journal of Social Work* (vol. 21, 6, of 2018, coordinated by Antonio López Peláez and Chaime Marcuello-Servós) and the *Journal of Social Work Practice* (vol. 33, 2, of 2019, coordinated by Gloria Kiwan), and the authors who exhibit their works there, as well as other relevant works (Castillo de Mesa 2017, 2019, 2019, 2021; Goldking, Wolf and Freddolino, 2019), are proof of this.

In the social domain, even with the difficulties of adaptation shown by some professionals with a more analogous profile, the main applications of new technologies have had to do with the storage and management of information (referred to as "electronic turn" in Social Work by Devlieghere, Roose and Evans, 2019), linked to the professionals' own tasks, such as the social history, the social record or the social report (Fantova, 2020; Santás, 2016).

Likewise, the potential of technology to serve geographically isolated citizens and persons with disabilities, as well as the ample space it offers to better engage with certain groups, such as young people and adolescents, either through online communication, telephone, or by videoconference, has been explored (Reamer, 2019, 2020), in addition to the construction of a virtual community of professionals, with the capacity to become a tool for building the profession (Aguilar-Idañez, Caparrós-Civera, Anaut-Bravo, 2020). A review of the advances in digital social work can be found in Fernández-Riquelme (2019).

Going a step further in the digital adaptation process, in this article we will focus more specifically on Artificial Intelligence (AI). As defined by the European Parliament, AI *"refers to systems that display intelligent behaviour by analysing their environment and taking action – with some degree of autonomy – to achieve specific goals"* (Boucher, 2020, p. 1). From this shared definition, there are different approaches to the fact of how AI becomes present in the concrete; from the "strongest", which consider that AI is able to "reproduce human behavior or thought", to the weakest, which consider that the specific of AI is that the system behaves well (rationally), remaining in the background whether or not it resembles human behavior, as proposed by Russell and Norvig (2016, p. 2).

In that text, Russell and Norvig establish the famous division between the different types of AI: systems that can "think humanly" (artificial neural networks); systems that can "act humanly" (robots); systems that can "think rationally" (expert systems) and systems that can "act rationally" (intelligent agents). Other authors have identified four categories of AI: reactive machines, limited memory, theory of mind, and self-awareness (Hintze, 2016).

The European Union has tried to provide a consensus definition, which focuses on how machines are able to achieve some kind of rationality through some kind of interaction with their environment, through sensors, and through data acquisition and analysis. The idea of rationality is that, based on this information, machines are able to adopt some kind of decision and action, in order to achieve certain previously defined (or not) objectives (European Commission, 2019).

That machines have a level of rationality also implies a certain ability to learn automatically (machine learning), since they are trained based on the iterative analysis of a collection of data, which makes these systems somewhat autonomous, i.e., independent of humans, once they have been created. However, this creation process is substantial and is carried out through the so-called algorithms, which are those that, through an iterative relationship with the environment, make it possible for systems to have the capacity to learn. Algorithms can be understood as a set of instructions designed to perform a specific task or solve a problem through a series of steps (Joyanes, 2003). This is very important, because it sheds light on the capabilities of machines, but in the end it makes it clear that they are only instruments that process and execute algorithms. In this sense, from the point of view of control and power, what is significant is the ability to influence the construction of algorithms and their ownership. For this reason, international institutions are constantly making proposals and recommendations for governments to have the capacity to influence ethical, political or social justice aspects (Criado, 2021).

On the other hand, the recent expansion of AI in many fields cannot be understood without the parallel development of Big Data, which owes its success to the so-called 3 V's (Miranda, 2015, p. 50): the processing of large Volumes of data, arriving at high speeds ("Velocidad" in Spanish) and with a great Variety of information sources. In this sense, the ability to store and manage this large flow of data, as well as the solution to some of the problems involved in working with massive data -such as accessibility, reliability and consistency- (Mayer-Schönberger and Cukier, 2013), have become one of the great challenges to strengthen the sources of information that feed AI.

With these concepts as a starting point, social services and the occupation of social worker could, in principle, seem unfavorable scenarios for AI to be installed, even though already at the end of the last century some authors

advanced the possibility of the development of "expert systems", neural networks and other predictive models to improve the results of intervention in social work practice (Patterson and Cloud, 1999). In fact, a study conducted by Oxford University (Frey and Osborne, 2013), on the risk that over seven hundred professions had of being automated in the future, concluded that Social Work had a risk of 0.3%, leaving it in an advantageous eighth position among the safest professions. The underlying reason for this lies in the importance of relational aspects (empathy, listening, assertiveness, etc.), in its three typical branches of social work: case or individual, family or group and community.

This congenital difficulty of Social Work to be automated explains in part the scarce echo that, with few exceptions, has among professionals and administrative managers responsible for the management of the Social Services system the possibility of thinking and anticipating a process that is taking place in all areas of professional practice (Ramió, 2019), although it is true that this situation is changing rapidly, at least among academics and practitioners. Examples are the Congresses of Madrid (2020: "I International Congress of Digital Social Work"), Zaragoza (2021: V International Conference of Sociology of Public and Social Policies, with the title "Artificial Intelligence, Economics, Democracy and Law: an unavoidable convergence") and Valencia (2021: IV International Conference of Social Work, entitled "Social Work in the digital era: ethics and care"). Precisely, the aim of this article is to offer an analytical proposal of those fields where it is possible, in the short and medium term, the introduction of AI in Social Work. Moreover, as we shall see, we shall present a number of cases in which this measure has already been decisively taken.

Even though we recognize its importance and the interest it arouses among professionals, we leave for another occasion the analysis of the risks that this new horizon of the profession undoubtedly entails. (e.g. Sewpaul, Kreitzer and Raniga, 2021).

## 1. Phases of AI integration in administration and specifics based on organizational model

We start from the hypothesis that the integration of AI into social services involves following the same stages as in any other area of administration. Although within this process, special features are allowed, depending on the specific administrative area in question. It is true that the ultimate goal of administration is to create algorithms with public values that address the different areas where artificial intelligence can play a role (Berryhill et al. 2020). But this process should be progressive so that the challenges to be met are based on a consolidated basis[3].

### 1.1. Phases of AI integration in administration

The phases of integration, according to Ansón (2017), are as follows:

**1st Phase: *Initial phase*, based on a firm commitment to 100% e-Government.**

This is a phase that many companies (especially multinationals) have passed, but which is currently under development in the administration, at least in Spain. Although this political and financial commitment to AI is occurring, automation is making modest progress. However, this is hardly sufficient to change the mentality of a large number of operators. In this phase, there are: (i) traditional systems that are hardly computerized; (ii) computerized systems that have no AI or only part of it; and (iii) other advanced systems, equipped with AI, which are being implemented and tested, and which have little impact on the activity of the administration.

Similarly, information systems are being developed in different areas of the administration.

**Phase 2: *Towards an administration with high information management capacity***

AI-based systems will replace traditional operations with automated systems that engage citizens. Systems without intelligence will become obsolete and there will be a strong trend to substitute AI for them. On the other hand, it will be necessary to ensure that the algorithms used in administration are informed by good information: to achieve this, information systems must be fully developed and interconnected (phase 1 completed). The problems encountered by the Social Services system in this respect will be discussed in detail below.

**Phase 3: Smart administration**

The full integration of AI will require, in parallel, an in-depth training and retraining process for civil servants, as they will need to understand their area of activity, not only from the point of view of their professional activity (in the case of social services, social intervention and other related tasks) but also from the point of view of automated management. The profile of the civil service will change rapidly towards the inclusion of more and more experts in

[3] We emphasize the value of social work in defining the algorithms to be used in the social services system, as well as the need to train future professionals on the issue (Goldkind, 2021).

automation and in the operation of machines with artificial intelligence. At this point, the real experts in public management will be systems with applied artificial intelligence.

### 1.2. Specifics based on organizational model

We have been able to see how the question of the implementation of AI in the specific area of Social Services must be analyzed in the context of what this process involves in any other area of administration (Ramió, 2019, 2021). In order to facilitate to a larger extent the fields of integration of AI in the Administration, we propose to start from three spheres or perspectives from which the public administration acts, each of them belonging to a specific organizational model (De Miguel Molina, 2010):

In the initial instance, we can focus on the Weberian-inspired *bureaucratic* approach or model, based on a public administration that is objective both with its workers (for example, in the selection processes) and in dealings with those administered.

From this perspective, there is a wide range of possibilities for the development of AI: management and granting (or denial) of benefits, verification of requirements for access to certain social resources, registration of actions actually carried out with users, auditing of benefits and/or services, etc. The benefit of AI, in this case, is that it can accomplish these tasks far better than humans themselves, ensure fairness in government actions, strengthen legal security and establish barriers to corruption (Cetina, 2020).

Secondly, we must pay attention to the administration as a provider of public services to citizens (*managerial model*). In this case, AI can clearly increase the productivity of the administration itself, making it more efficient or, in other words, doing more for less. In the social and healthcare field, we can think, for example, of devices that perform tasks related to accompanying the elderly, remembering certain activities (for example, taking medication), being alert in the event of a fall and alerting emergency services, etc. (Aceros, 2018).

And thirdly, we must look at the commitment to a more modern administration that is acquiring various labels (New Public Management or New Public Governance). In this case, the existence of a plurality of actors with influence and interests in public affairs is recognised, and the administrator assumes the role of an orchestra conductor, in the knowledge that he or she works in increasingly complex networks.

The fundamental dimensions in which AI has (or will have) a leading role from this perspective have to do with everything connected with planning, network governance (towards a participatory or deliberative governance) and transparency and accountability, as has already become evident in some areas in the field of Social Services. It is this last approach that has to do with digital disruption, which breaks with the way of doing (and designing) solutions to the challenges that organisations face (Castillo de Mesa, 2021), coming to be referred to as "Governing the digital transformation" (OCDE et al., 2021, pp. 194-205).

## 2. Towards an analytical proposal on ways of integrating AI into social services.

Up to this point, we have described a general framework for all administrations in the integration of AI, both from a diachronic (phases) and synchronic (government models) perspective. But beyond these phases common to all sectors of the administration, it is necessary to propose an analytical scheme that allows us to observe (and design) the possible ways of integration of AI in the Social Services, based on the particular characteristics of this system. For this reason, we consider that this is the time to make a brief halt and to begin a reflection on the different fields of work of Social Work related to Social Services. From there, look at the possibilities for AI integration in each of them.

It is well known that social work has both models and methods. The former are based on different theoretical approaches and propose a way (always hypothetical) of understanding the logic of the functioning of the social and, therefore, from it emanate principles of social intervention (Howe, 2009). There are different models (systemic, behavioural, psychosocial, ecological, humanistic, etc.), on which we will not dwell now. The second, the methods, refer to the systematic processes which, with the use of the necessary tools and instruments, allow, in the first place, to know the reality and, subsequently, to guide the intervention in different scenarios and/or situations. The best known are individual, group and community intervention. It goes without saying that each area of intervention can adopt a series of particular methods and techniques, depending on the model of Social Work from which it is based, which allows us to consider a methodological diversity (Viscarret, 2014, p. 38).

As far as we are concerned, what is relevant here is that four distinct phases can be identified. This is irrespective of the theoretical currents from which professional practice is nurtured or even of the organization of the Social Services system. It is also independent of the type of intervention in question.

- A diagnostic or analytical phase, in which a study is carried out of the reality (individual, group or community) on which intervention is planned.
- A programme phase, during which a number of activities and actions are implemented.
- An implementation phase, or the intervention itself, during which these activities and actions are carried out.
- An evaluation phase, to examine what has been done and, with lessons learned, to initiate other future processes with more evidence and guarantees of success.

From there, there are other parallel or derived actions that must also be considered, such as the first contact and access to the system, the planning of the system itself or preventive actions.

All these phases and fields of activity take place in a localised environment, i.e. institutionalized. This is due not only to the fact that the social services system is a public (legislated) legal system, but also to the fact that it is a public system that it takes place mainly within a administration and on the basis of its financing lines for projects in the third sector or the private sector. This framework also needs to be considered when establishing AI principles in the non-public domain of social service management.

A more detailed table shows the specific areas where AI can be introduced into the professional practice of social work and the social services system. The objective is to summarize what has been said up to now in this section and to facilitate its understanding. This will allow us to verify to what extent and through what experiences it is been effectively introduced. It is both a research program and an implementation program for AI in social services.

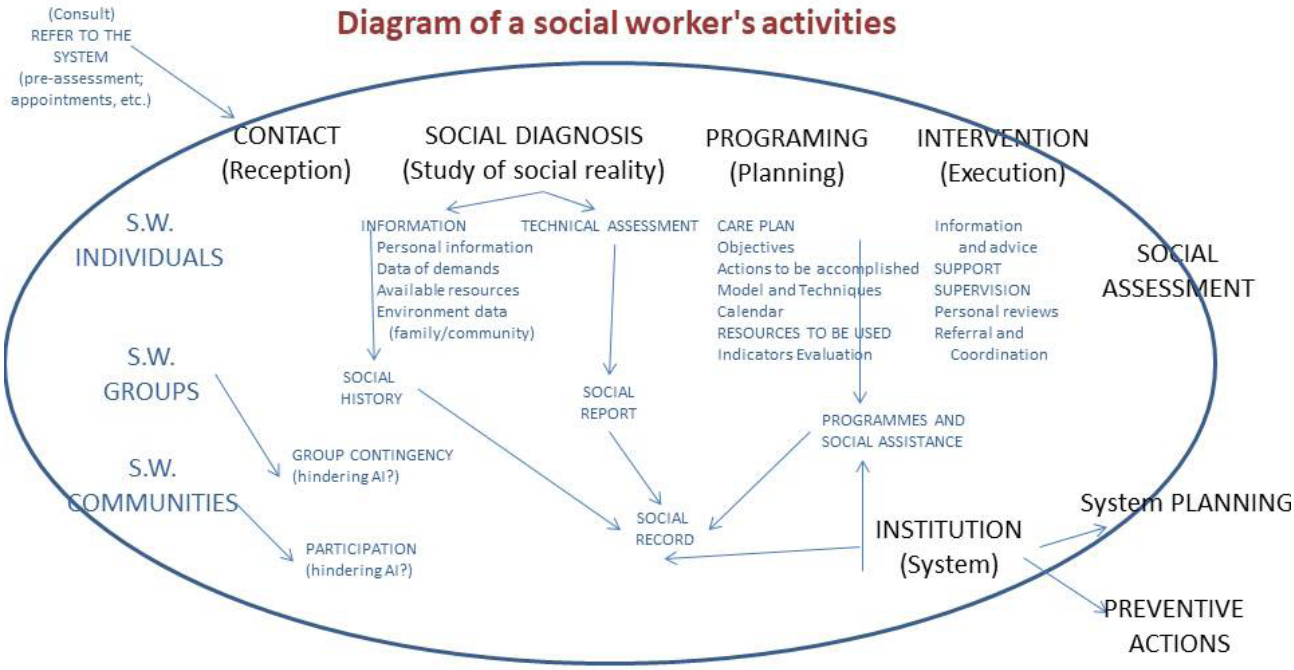


Figure 1: Description of a social worker's activities.

After Chan and Holosko (2018), we can detect different ways to embed AI in social work. In typological terms, we would take as a starting point what has traditionally been done in the practice of the profession itself (technicisation of certain tasks), through these initiatives led mainly by professionals, but which include some applications or software (without which these initiatives would be impossible) and, finally, it would lead to processes (projects, interventions, etc.) that would be fully implemented through computer applications or AI systems. Where the role of professionals is small or absent (Chan & Holosko, 2018, p. 8).

Therefore, a double input table could be built, in which the columns would show each of the domains or actions in Figure 1; and in the columns the degree of engagement of professionals and artificial intelligence. Each cell would represent an opportunity to develop (and analyse) AI within social services.

## 3. Information systems, the real Gordian knot in the introduction of AI in social services

If there is agreement on one point among experts in this field is that AI can only be developed in a certain area on the basis of a good information system, technically known as a data warehouse. Among the different existing definitions, one that can help us to understand its importance is the one that proposes that *"A data warehouse is a subject-oriented, integrated, time-variant and non-volatile collection of data in support of management's decision making process… is a technology that aggregate structured data from one or more sources so that it can be compared and analyzed…"* (Almeida, 2017, p. 8).

If this question is important, it is not only because of the opportunity to take the step towards smart public administration, but also because the sharing of information from different sources on intervention processes is a necessary condition for developing intelligent interaction with the user himself, based on complex socio-technical processes, with the aim of solving problems.

From a national point of view, talking about a social services information system refers to the SIUSS (Social Services User Information System).[4] This information system, focused on primary care and eminently locally based, is in fact a computer application owned by the General State Administration, it is based on the social report, which, by means of specific agreements, assigns its exploitation to the regional and local administrations. It was developed in 1994 and has undergone several changes and extensions of its modules, with the current version 5 (year 2022) in force.

Confirming the well-known "Conway's Law",[5] several studies have shown that the criteria for recording assessments and resources used in SIUSS vary greatly between communities, municipalities and even professionals, in some cases even using other parallel information systems and recording only some interventions in the SIUSS (Aguilar and Rodríguez, 2018)..

Faced with this situation, at the beginning of the 14th legislature (2019), the Spanish government began a review process of the various information systems that have to do with exclusion and/or inclusion processes in Spain. From a social services perspective, this process revolved around what was known as the *"United Social History"* (HSU), which was electronic in nature, and which de facto meant a reform of the SIUSS. In principle, the process should have been global and unique throughout the State and should have considered a number of criteria:

- First, move from a centralized system (large and cumbersome for the whole country) to a simpler system, in which the minimum information requirements that should be common to the whole of Spain were agreed, so that all the systems of "Autonomous Communities"[6] should include them, and, from there, leave each autonomous region free to develop its own system.
- Integrating (or interconnecting) primary care databases with secondary care databases, especially with that of Dependency Care.

But this process was interrupted in early 2020, largely due to the "standstill" effect produced by the pandemic. The fact is that this initiative and the subsequent stop has led to an uneven process of development and implementation of electronic HSU in the different Autonomous Communities. Each of them has taken their own initiative,[7] which will undoubtedly pose problems in the future with respect to interoperability.

To this fragmented panorama of the Autonomous Communities, we must add the steps taken by some large city councils,[8] or even provincial or island councils[9] in terms of information systems, which contributes to the complexity of the situation.

Of course, the data warehouse is not limited to the Social Services information system because it needs to be able to interact with other sources of information that are indispensable for decision making and a move towards AI-driven management (information systems for health, employment, housing, tax, etc., as well as connection with other sources of information, such as Padrón -register of inhabitants-, Labour Force Survey, etc.).[10] But it is also true that without this point of departure it is impossible to achieve this goal. For this reason, it has been decided to name this section with the reference to the fact that the social services information system is the Gordian knot that will allow us to move towards an intelligent administration in this area. It is a necessary but clearly insufficient condition.

## 4. Some of AI's experiences with social services.

It should not be forgotten that AI is entering into force in various areas of public administration, although it may be in health care where it has been most developed (APDCAT, 2020, pp. 33-34). From applications that ask us about our symptoms and establish a diagnosis (Mintz and Brodie, 2019), to the collection of different data from the interpretation of medical images to identify various types of cancer, from histopathology to neurology (Sánchez-Caro and Abellán-García, 2021). Action has also been taken on justice (Simón, 2021, p. 8), education (UNESCO, 2019)[11] or employment (World Economic Forum, 2020; Vardarlier and Zafer, 2020).

In terms of social work, in a recent study, but now almost thought of as a classic, Milind Tambe and Eric Rice (2018) argue that the use of AI in this area is supported by several circumstances: the complexity of social issues

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4 In Spanish SIUSS: "Sistema de Información de Usuarios de Servicios Sociales"

5 *The basic thesis of this article is that organizations which design systems are constrained to produce designs which are copies of the communication structures of these organizations* (Conway, 1968, p. 31).

6 Spain is organized territorially into 17 "Comunidades Autónomas" (Autonomous Communities), units equivalent to regions.

7 As far as we know, in June 2021, Galicia, Andalusia, Asturias, Castilla La Mancha and Catalonia had it developed or were in an advanced process (i.e. beyond declarations)..

8 To mention but a few examples: Barcelona has the SIAS (Sistema d'Informació d'Atenció Social) and the city of Madrid has the CIVIS to track the history of citizens seeking assistance or already receiving social benefits.

9 For example, the Diputació de Barcelona has the DIBA-Hestia Information System. And the Consell de Mallorca has the Integrated Social History (HSI).

10 Something that is being developed in the Autonomous Community of La Rioja or, as a pilot project, in the Autonomous Community of Castilla-La Mancha (interacting social services and employment databases).

11 In a narrower perspective, consider, for example, the impact of AI on the education of future social work professionals (Hodgson, Goldingay, Boddy, Nipperess y Watts, 2021).

and the uncertainty that goes with them, the uniqueness of each situation analyzed (which will never be the same as another, although it may be similar) and the need to seek viable solutions (Tambe y Rice, 2018, p. 10).

Reading the chapters in this book, we understand the difficulty of fully integrating AI in the field of social services. This is because many of the cases given as examples are aimed at the use of new technologies and social networks in the field of awareness-raising (closely linked to healthy practices). Or also to the prevention of certain dysfunctional or problematic behaviors, or of the relationship with citizens and, in general, everything that could be included under the term *Digital Social Work*, which was already being developed before the pandemic (Mishna et al., 2017).

It is true that the theoretical approaches, as well as the practices of Social Work, show difficulties in responding to the current problems of globalization and the challenges posed by ICTs (West and Heath, 2011). But there have been major advances; including the "Grand Challenges for Social Work" initiative of the *American Academy of Social Work*, created in 2015, should without a doubt be put forward. In its five-year report, the Academy dedicated a chapter to the use of technology for the social good ("*Harness Technology for Social Good* ").[12] It states that it is imperative to fundamentally transform the field of Social Work with respect to its relationship with technology, harnessing Big Data and ICTs to improve the effectiveness of social programs. They draw particular attention to the development of the field during 2020, the first year of COVID-19, as social distancing measures dramatically accelerated the adoption of technology, from telecommuting and distance learning to virtual conferencing and telehealth (Mishna et al., 2020).

From this project emanates one of the most interesting articles on the subject, specifically aimed at exploring the possibilities of Big Data in Social Work, which dates back to 2015. It states that "…many of the complex data sets now available in the social sector have the potential to inform policy and practice responses to persistent social issues…" (Coulton, Goerge, Putnam-Hornstein and Haan, 2015, p. 10).

But the truth is that, although relatively slowly, AI is already active in Spain in the area of social services. In fact, some of its experiences have already been analyzed and made known (Codina, 2020), as well as projections that in the future they will cover a multiplicity of domains, moving toward "intelligent social services" (Fantova, 2020, p. 11). What we propose is to take a look at the different initiatives that are taking place, in order to have a picture of the progress made in Spain in this area. To do so, we will follow the diagram proposed above.

In the initial contact, as well as in checking the flow of new users coming into the system, AI can help assessing the suitability of selecting an appointment with one or another professional. It can also proceed to the territorial allocation of users, or modulate waiting lists, etc. AI could be used to avoid traffic jams, overcrowding, idle resources, real-time evolution of demand, etc. A very interesting example can be found in the City Hall of Valencia, concerning the reduction of waiting lists in the care of situations of dependence. A georeferencing system for cases was developed from available databases. This has allowed the application of computer filters to screen urgent cases and speed up visits to be made by professionals, gaining in effectiveness and efficiency (Galvañ, 2021).

We now focus on "Information for citizens", which is one of the basic services in the social services catalogues. It provides citizens with information on the range of benefits, along with their rights and obligations. In addition to what has traditionally been done in person and on paper (Letters of Rights, Resource Guides, etc.), in recent years, the development of the Internet has made that information available electronically via search engines. But AI creates infinite possibilities. For example, the Town Hall of Barcelona has created an app ("Las meves ajudes") in which by inputting a serie of data (family members, income, etc.), the system returns to you the financial benefits to which you are entitled and the administration who manages them.[13]

Regarding the intervention itself, there are already some initiatives worth mentioning. For example, the Town Hall of Barcelona has launched a pilot test of "Collective Intelligence", in three of the city's social services centers (Verneda, Sant Gervasi and Casco Antiguo), where a tool (*machine learning*, trained with 300,000 files) has been implemented. Based on the results of the interview with a user, the tool provides the requests, problems and responses that are most suitable for the interviewee, always in accordance with the information entered. Professionals are responsible for overseeing and validating the tool's proposals.

Concerning the monitoring of interventions, we also found interesting experiences, such as that of the Junta de Castilla-León: based on Big Data and machine learning techniques, it offers co-ordination between public and private entities (sharing information). And seek to ensure that the care provided to people is coherent, comprehensive and individualized.[14] Likewise, from a prevention perspective, it allows the use of data technology and other techniques to build anticipation capacity in the system. This involves identifying vulnerabilities and risks, and acting in advance through appropriate strategies.

In this sense, the Andalusian Regional Government has developed the "Cohessiona system", which was created with the objective of implementing the electronic Social History. This is understood as an integrated management system that incorporates in a single electronic information system the management of community and specialized social services, as well as the information on all public and private providers. The personnel of the system can share and consult the history of the users with sufficient guarantees of security, privacy and protection of personal data.

12 https://grandchallengesforsocialwork.org/resources/harness-technology-for-social-good-five-year-impact/
13 https://ajuntament.barcelona.cat/lesmevesajudes/ca/simulaci%C3%B3-dajudes-socials#/
14 https://eucyl.jcyl.es/web/jcyl/Eucyl/es/Plantilla100Detalle/1277999678552/_/1284828050476/Comunicacion

The use of data mining in planning is becoming more widespread (Nguyen, Nguyen, Nguyen and Tran, 2021), despite limitations identified by some authors (Mökander, 2021). The creation of different data warehouse models makes it possible the interaction of information and its use for planning processes in the area of social services. And that's done in different jurisdictions in a more or less automated manner. The high level of automation is developed, once again, in the municipality of Barcelona. Through a project based on "Big Social Data", a management system is being developed with the intention of exploring and learning about the social reality of the city of Barcelona and, thus, adapting the necessary resources according to the needs, and according to the territory.[15] Big Social Data has 3 strategic goals: a) The overall dimension: for service planning; b) The individual dimension: for professionals' work using a 360° approach; c) The anonymous personal dimension in the search for models of poverty and health impact, the calculation of the social impact or SROI of a measure or project, etc.

As far as evaluation is concerned, all of these systems make it possible, in one way or another, to learn from decisions taken and to evaluate possible alternatives. For this purpose, they introduce a continuous improvement line, based on the accumulation of data in the information system.

## 5. Conclusions

This text has enabled us to tackle the complex task of understanding the processes of integrating artificial intelligence into the world of social services in Spain. On this basis, we were able to identify areas in which a more than a desirable program for developing AI in this system can be promoted. To this purpose, the starting point was knowledge of the criteria for AI integration in any administration, in order to try to adapt this process to the peculiarities of the Social Services system, based on the explanation of its own characteristics.

Starting from the central role played by the development of a powerful Data Warehouse in the field of Social Services, for the implementation of a viable policy of AI integration, we have been able to verify the strong weaknesses of the currently existing information systems in Spain; marked, among other issues, by the fragility and fragmentation among autonomous communities and other administrations.

The fundamental contribution of the article focuses on the provision of a systematic and well-founded guide based on the areas and fields in which this program could be developed, pointing out the direction to be taken in each of them. In this way it opens up a path which at first sight seems complex, especially in this world of social media, and which offers more doubts than possibilities in the eyes of many professionals in the sector.

As well, beyond this initial theoretical-practical proposition, it has been possible to verify the extent to which some interesting initiatives are taking place in Spain, at different levels of administration and in different fields of action of the social services. However, these initiatives are characterized, with some exceptions, for being strongly dependent on the political and technical will of certain people (i.e., for not having a plan to promote them), for the disconnection between them and the consequent lack of knowledge transfer to other administrations, which hinders mutual learning and their extension, in the event that they prove to be successful.

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