Intelligent management of aid to citizens and companies
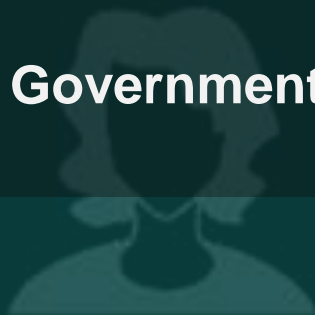
Andalusian Regional Government

October 2022

Index

0. Executive summary

The multiple transformations of the world we live in require to adopt an attitude of openness to innovation that allows us to adapt to new realities.

In this scenario, **public administrations must act as drivers of change by incorporating innovation as a strategic key**, pursuing the continuous improvement of their processes in order to meet the new demands of society.

With this objective, the **Andalusian Regional Government** has managed to build an **intelligent aid management model** that improves the efficiency of the Andalusian Administration thanks to **reuse.**

Intelligent management of aid to citizens and companies

Based on **Robotic Process Automation (RPA)** and **Intelligent Document Processing (IDP)** technologies, this model takes advantage of the **common elements in the aid processes for its development and agile release, enhancing the response capacity** of the Administration to **guarantee the distribution of aid to citizens and companies in critical moments** such as those experienced during the COVID19 pandemic.

This approach allows the **continuity of the project**, making it **scalable** and increasing its **reliability** and **performance**.

This is an **evolution** of the traditional use of **these technologies for their intelligent application to a real need**, the management of aid, based on data, constituting the **first step** towards the **hyper-automation of the** Andalusian Administration to place itself at the forefront of society.

*An **evolution** of the traditional use of RPA and IDP technologies for their **intelligent application to a real need**, constituting the first step towards the hyper-automation of the **Andalusian Administration** in order to be at the forefront of society.*

Transforming the way the Andalusian Administration works, accelerating the implementation and use of disruptive technologies and the development of skills of all public employees for greater efficiency and modernization.

1. Introduction
1.1 Context

In addition to its dramatic social consequences, COVID19 had a strong impact on the economies of all countries, and especially on the economies of families. The pandemic forced the closure of workplaces, cancellation of activities and restrictions on mobility, severely affecting strategic sectors of activity, particularly the self-employed and small and medium-sized enterprises.

In Andalusia, SMEs represent 99.9% of the business fabric, and **around 2.5 million Andalusians work** for them. In this context, it was a priority for the Regional Government of Andalusia to establish the necessary aid mechanisms to meet the financing needs of these companies for the payment of salaries, invoices or liquidity, among others.

The European Union, committed to economic recovery and the protection of citizens' rights, **made it possible to provide the Andalusian region with funding for the implementation of a large number of aids** that would help to preserve employment, strengthen the productive fabric and ensure its financial sustainability.

The table shows the characteristics of SMEs in Andalusia, data collected in the **Central Directory of Companies (DIRCE)** prepared by the **National Statistics Institute (INE)** as of **January 1, 2021**.

The **aid management** process is, at the same time, **one of the most common and complex processes** that the Andalusian Administration has been carrying out manually.

	Companies	COMPANIES PER 100,000 INHABITANTS	%
Companies per size			
Total companies	531.160	626,9	100,0
SME (0-249) employees	530.719	626,4	99,9
SME without employees	289.289	341,4	54,5
SME with employees	241.430	285,0	45,5
Microentreprise (1-9 employees)	221.914	261,9	41,8
Small companies (10-49 employees)	17.154	20,2	3,2
Medium (50-249 employees)	2.362	2,8	0,4
Big companies (>250 employees)	441	0,5	0,1
Companies per sector			
Total companies	531.160	626,9	100,0
Industry	28.366	33,5	5,3
Construction	58.976	69,6	11,1
Commerce	132.504	156,4	24,9
Other services	311.314	367,4	58,6
Companies per legal status			
Total companies	531.160	626,9	100,0
Natural person	324.254	382,7	61,0
Public limited company	4.829	5,7	0,9
Limited liability company	165.335	195,1	31,1
Joint ownership	11.528	13,6	2,2
Cooperative	4.318	5,1	0,8
Other legal forms	20.896	24,7	3,9

The **complexity of aid management** is due to several factors:

Tight **deadlines and execution dates.**

High volume of files.

Need for **robust systems to support the entire procedure**.

High number of requirements to check.

Large number of **repetitive tasks for managers**, leading to **high error rates**.

Reduced number of managers.

In many cases, these difficulties resulted in **having to return the funds received**, as they did not have sufficient capacity to manage them adequately on time.

1.2 Intelligent automation transforms aid management

In this context, the **Digital Agency of Andalusia**, through the **Intelligent Automation Unit (UAI) implemented** the aid automation process, based on innovative process automation technology (**Robotic Process Automation-RPA**).

Intelligent aid management is already working for strategic sectors where the aid needs to be resolved in an agile manner, through different projects. In total, **more than 800,000 operations** have been managed so far **for 9 processes**.

In terms of employment...

Regional Ministry of Employment, Enterprise and Self-Employment

More than 240,000 applications have been processed for aid to the self-employed and companies affected by COVID19, aid to the hotel industry, companies in Record of Temporary Employment Regulation, rent of establishments and settlement of debts with suppliers.

- **60,000 Solvency Plan applications for** the payment of fixed expenses, debts and invoices generated during the pandemic.
- **27,000 applications for** direct aid to the **self-employed.**
- **15,500 applications** for paying **rent of establishments.**
- **95,300 requests** for the reactivation and maintenance of the **hotel sector.**
- **15,900 applications** for aids for the **digital transformation.**
- **30,000 applications** within the framework of the **Recovery and Resilience Plan.**

In terms of transportation...

Regional Ministry of Development, Articulation of the Territory and Housing

The requirements for 367 applications for subsidies for occasional transportation have been verified (SMEs, sales fall, bankrupt companies, average number of workers, identity, current payment of taxes and fees, registration in the public bankruptcy registry, sanctions for contracting with the General Administration, etc.).

In terms of trade...

Regional Ministry of Employment, Enterprise and Self-Employment

More than 59,000 applications have been processed for aid to the commerce and hotel industry for self-employed workers and companies affected by COVID19**.** Specifically:
- In 2021, **55 thousand applications** were processed for the **retail and hotel industry sectors**.
- In 2022, **4,000 applications** were processed for the modernization of **commercial and artisan SMEs**.

In terms of tourism...

Regional Ministry of Tourism, Culture and Sports

More than 4,000 applications have been processed for aid to self-employed workers and companies affected by COVID19, active tourism, rural houses, tourist guides, travel agencies, hotel establishments, tourist apartments and tourist camps.

1.3 Governance of the intelligent management of aid to citizens and companies

The Andalusian Regional Government

Spain is organized territorially into regions with autonomy for the management of its interests. In the region of Andalusia, the body **responsible for its self-government is the Andalusian Regional Government**, which works to serve more than **8.5 million inhabitants.**

DIGITAL AGENCY OF ANDALUSIA (ADA)

It is the body of the Andalusian Regional Government responsible for **providing IT services** to all departments of the Andalusian government.

Since its inception, ADA has been committed to the incorporation of **disruptive and innovative technologies for the modernization and digitization of the Andalusian Regional Government,** among which **RPA technologies** and **IDP** stand out.

- It provides a **unique strategy** for creating the **digital model of the future**.

- It allows for **streamlining the provision of services**, the **management of** technological **resources** and the **economic sustainability.**

The ADA brings together **in a single body** the **ICT staff of all the Ministries**, which includes **more than 1,000 people from the 8 Andalusian provinces** who work to make **the Andalusian Regional Government more agile, useful and humane.**

Its objective is to **provide a sustainable model** for the digital transformation of Andalusia **based on knowledge and innovation, reducing the digital divide.**

INTELLIGENT AUTOMATION UNIT (UAI)

In 2022, this **centralized service** is created **for the adoption of intelligent automation technologies**, combining **Robotic Process Automation (RPA) and Artificial Intelligence (AI).**

- It **integrates all robotization initiatives** of the Andalusian administration under a **common framework and methodology.**

- **Increases efficiency** in the provision of public services, with a catalog of **reusable solutions** such as the **automated aid management** process.

MISSION
Save time for managers to dedicate themselves to tasks of greater added value, streamlining public services.

IMPROVING CITIZEN SERVICE
Making him proud of his administration.

IN AN AGILE AND INNOVATIVE WAY
Incorporating emerging ideas and technologies.

OPTIMIZING EFFORTS
For a sustainable, efficient and secure evolution to achieve digital transformation.

1.4 Innovation Challenges and Objectives

Beyond RPA technology

The results obtained with the intelligent management of aid cannot be explained solely by the implementation of RPA technology; there are **even more decisive factors that have made this project a benchmark of innovation for the public sector:**

We have managed to **consolidate a reference model** for the entire Andalusian Regional Government, **based on the reuse of** components for greater scalability and reliability.

We have **standardized the processing of aid**, by verifying the requirements common to different calls for proposals, being able to replicate the model to other public administrations.

We are taking the first steps towards the hyper-automation of the Andalusian Regional Government, which will allow us to improve our processes from an integral vision of the data for intelligent decision making.

We are positioning the **Andalusian Administration as a key player in achieving greater efficiency in public services and improving the quality of life** of citizens, contributing to the economic reactivation of the region.

This project is part of the **Digital Europe 2021-2027 program** launched by the European Parliament with the aim of supporting the **digital transformation of European societies and their economies,** addressing issues such as supercomputing, artificial intelligence, cybersecurity, digital skills and the extension of digital technologies in the economy and society.

Along the same lines, the Spanish government approved Digital Spain 2025, which this year has been continued in **Digital Spain 2026, an** updated agenda that promotes the **country's digital transformation** as one of the fundamental levers for **relaunching economic growth, reducing inequality, increasing productivity and taking advantage of the opportunities offered by new technologies, while respecting constitutional and European values and protecting individual and collective rights.**

In order to achieve this objective, it is **essential to drive innovation**, not only from the perspective of promoting innovative technological solutions, but also **by integrating an innovative culture into daily work that helps to achieve an effective digital transformation.**

2. The aid process
2.1 Characteristics

The aid processes are characterized by:
- **High volume of files** to be processed.
- **High number of requirements** to be checked for each application.
- **Complex processing** in the process flow.
- **Dates and** deadlines **determined** by the process itself.

The process is broken down into **two independent parts, the first part is for consultation of requirements and the second part is for processing**. As the requirements are evaluated, progress is made in the processing of the file.
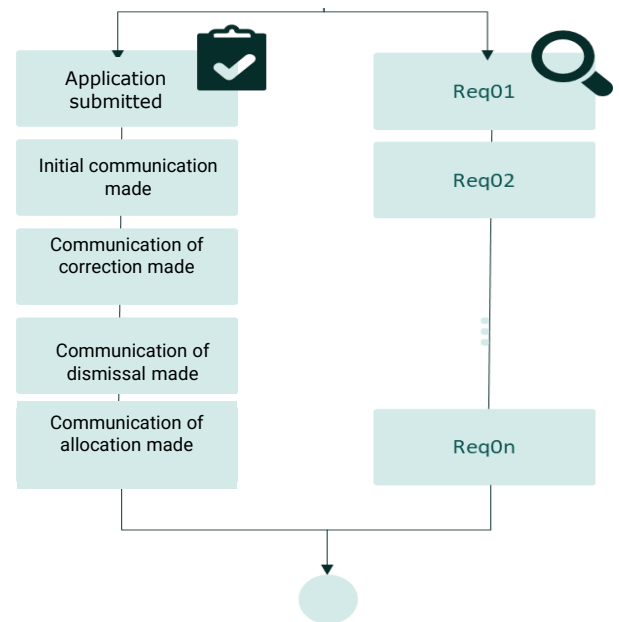
The **requirements query blocks** are implemented in an abstract form, so that they can be **almost 100% reusable from one process to another.** This design achieves the following:
- **Standardize and homogenize** the management of aid.
- **Minimize** start-up time.
- **Reuse** already developed components.
- **Optimize** licensing **costs.**
- **Minimize** automation **costs.**

2.2 Processing

The processing process includes the activities **from the registration of the application file to the acceptance or denial of the aid.**

The processing systems facilitate the **integration of** e-government **components and basic functionalities**.

The intelligent automation helps both **in the progress of procedures** through their different phases and in the **intelligent treatment of documents**, such as invoices and proof of payment.

The proposed model can **automate tasks** such as:

- **Download of the documentation provided** by the applicant in the electronic window.
- **Notifications to the citizen about the progress of their file** (communications of initiation, corrections, favorable resolutions, prior preparation, withdrawals, etc.).
- **Update of the status of the request** to make it available to the citizen.
- **Verification of** payment **vouchers** and invoices, once the aid has been accepted.

In addition, the **exchange of information between the managers and the automated process** is articulated to guarantee the complete processing of the file and to be able to cover those revisions that must be validated by a person.

2.3 Requirements query

In all aid processes, **a series of mandatory requirements** must be **evaluated in order to be accepted**. Depending on the call for proposals, the number of requirements to be evaluated may reach **30 queries for each file**.

The requirements can be classified into two groups:

COMMON REQUIREMENTS

Those that must be evaluated **in all calls for applications for aid managed by European funds**. These include verification of identity, in the case of natural persons; being up to date with payments to the State or not having been sanctioned for obtaining subsidies.

SPECIFIC REQUIREMENTS

They are **determined by the sector that summons them**, for example, to have carried out regular transport or to be registered in the register of cooperatives in transport, or in tourism to be registered in the tourism database or to have a maximum number of workers on a specific date.

The evaluation of requirements can be done in different ways, through web service of computer applications, database queries, files or web pages, all of which **can be automated through** our intelligent management model.

2.4 Evidence

By **evidence** we mean the **proofs that are collected during the operation of the robot**. The collection of evidence provides reliable and verifiable elements that certify that the robot has performed certain actions.

This evidence, as a rule, will be **screenshots** taken at specific times or **data collected** to ensure that a certain step of the robot was performed.

Evidence has mainly two uses:

- Allowing a **follow-up of your operations**, having **traceability of the file.**
- Serve as an **anchor point for possible reprocessing** and **auditing**.

2.5 Hyper-automation

One of the main goals of this intelligent process management model is **hyper-automation**, a **strategic approach** that adopts a **global point of view to improve the processes of the Andalusian Administration:**
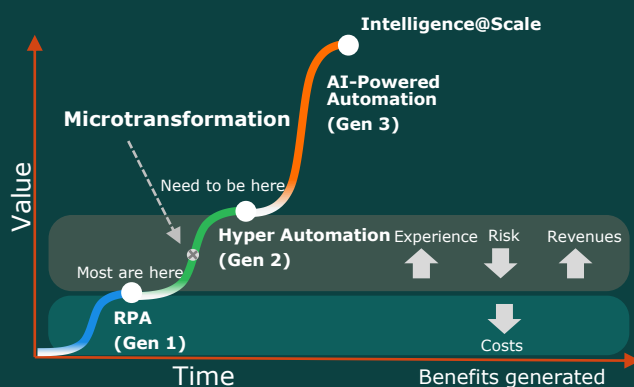
Gen 1 **Automation** focuses on the RPA solution without looking for opportunities. **Gen 2 Automation** brings the focus of RPA to data-driven automation and intelligent decision making.

This approach drives **substantial process improvement** with the application of digital technologies, through comprehensive assessment to **identify levers** throughout the value chain that contribute to a measurable impact on performance.

2.6 Technologies used

Intelligent aid management combines **different technologies**:

ROBOTIC PROCESS AUTOMATION (RPA)

Robotic Process Automation (RPA) is the use of **robots or bots to perform specific, repetitive tasks in an automated manner**, freeing people from **high-volume, routine and repetitive tasks**.

Characteristics of the RPA

NON-invasive technology	Rapid return on investment	Reliability	Increased professional motivation
Traceability	Increased Performance	Wide range	Scalability

INTELLIGENT DOCUMENT PROCESSING (IDP)

Intelligent document processing or IDP refers to the **automated processing of document content**. It includes tasks that are usually performed by a document manager.

Classify documents	Data matching	Extract information

In a transversal way, we must speak of **INTEROPERABILITY** between the processes and tools on which they act, which is made possible **thanks to the reuse of elements** between the different calls for aid, favoring agility in the developments.

3. Results obtained

3.1 Intelligent management in figures

More than 300,000 aid applications

Since its launch, the intelligent aid management system has processed more than 300,000 aid applications.

The **agility** with which this aid was delivered managed to mitigate the effects of COVID19 at its most critical moments,

The **timely completion of the** processing of these subsidies, with the pertinent verifications, **allowed**

ensuring the survival of SMEs and the self-employed

all beneficiaries to receive the aid,

and alleviating the impact on the economy of Andalusian families.

avoiding having to return the funds received for lacking management capacity.

Nearly 95,000 hours freed up for managers of aid to SMEs and artisans

This process alone has made it possible to improve **processing efficiency**,

Freeing up nearly 95,000 hours for managers to devote to higher-value tasks where they can apply their experience and knowledge.

In addition, the system allows **reducing the error rate**, which also saves other added costs to the Administration.

The process was executed with more than **40 robots in parallel**.

More than 75 robots working on employment aid

Regarding the management of employment aid,

More than 75 robots were used through **9** different **procedures**.

All this has given **credibility and legitimacy to the Andalusian Administration.**

And more importantly, it **has enabled the aid to be distributed to all beneficiaries in a timely manner.**

3.2 Potential beneficiaries

CITIZENS AND COMPANIES

In **2020**, Andalusia had **more than 600,000 self-employed people** who **could benefit from this aid**, **17% of the total number of employed people**. Currently, there are aids for rent, flat rate, solvency support and digital modernization, eco housing Plan, tourism, inactivity of fishing vessels, among others.

The intelligent management of aid seeks to benefit the greatest number of people by focusing on the **areas that drive employment** in the Andalusian region:

	Microcompanies 0	1-9	Small 10-49	Medium 50-249	Pyme 0-249	Big companies more tan 250	Total
ANDALUSIA							
EXTRACTIVE INDUSTRIES	109	179	53	6	347	3	350
MANUFACTURING INDUSTRY	8.830	13.577	2.816	381	25.604	57	25.661
SUPPLY OF ELECTRICITY, GAS AND WATER, WASTE MANAGEMENT	1.008	1.105	181	47	2.341	14	2.355
BUILDING	31.803	24.014	2.906	236	58.969	17	58.976
TRADE; REPAIRING OF MOTOR VEHICLES, MOTORCYCLES	67.458	61.863	2.717	365	132.406	98	132.504
HOTEL INDUSTRY	12.906	33.521	1.564	187	48.178	21	48.199
TRANSPORT AND STORAGE	16.937	12.708	1.179	143	30.969	25	30.994
FINANCIAL INTERMEDIATION	9.649	3.173	84	4	12.910	6	12.916
INFORMATION, COMMUNICATIONS AND BUSINESS SERVICES	85.476	37.350	2.906	342	126.074	100	126.174
EDUCATION	9.084	5.970	701	266	16.021	31	16.052
HEALTH AND SOCIAL SERVICE ACTIVITIES	16.536	8.762	861	181	26.340	37	26.377
OTHER SERVICES PROVIDED TO THE COMMUNITY	29.493	19.692	1.186	199	50.570	32	50.602
TOTALS	289.289	221.914	17.154	2.362	530.179	441	531.160

Business structure and dynamics in Spain. Number of companies by size and sectors in the autonomous community of Andalusia. Ministry of Industry, Commerce and Tourism - Statistics and publications on SMEs.

COMMERCE

Subsidies have been provided to **commercial and artisan SMEs**, the **retail trade, the hotel industry and travel agencies** to offset the impact of COVID19.

132,504 SMEs engaged in this sector, This means that nearly **17 million people could benefit from this aid.**

HOUSING

Aid for **residential rehabilitation** and **social housing,** as well as **rental aid for young people**.

60,000 SMEs engaged in construction, More than **7 million professionals** whose **employment could depend on this aid.**

TOURISM

Aid to active tourism companies, rural houses and guides, travel agencies, hotels, tourist apartments, tourist camps, motorhome areas and rural resorts.

48,199 SMEs engaged in the hotel industry This represents a potential benefit of the subsidies for **more than 6 million workers.**

TRANSPORTATION AND FISHING

Subsidies to projects for the **discretionary transportation of passengers by road**.

Aid for the temporary cessation of **fishing activities**.

30,000 SMEs linked to transportation, With **nearly 4 million employees**

350 SMEs in the extractive industries, With **about 45,000 Andalusians** as **potential beneficiaries.**

3.2 Potential beneficiaries

PUBLIC ADMINISTRATION

In **January 2021** there were **around 300,000 public employees** working for the Andalusian Regional Government, according to data from the Ministry for Finances and Public Administrations.

The new intelligent aid management model provided all of them with a new work methodology to improve the efficiency of their processes, saving time to devote to **tasks of greater added value and streamlining public services**.

Those **responsible for the management of the aid** in the various bodies of the Regional Government are responsible for **defining and calling for aid**, providing information on the requirements and tasks to be performed by the robot, adapting the systems to the robots or the robots to the systems.

INTELLIGENT AUTOMATION UNIT (UAI)

Currently, there are already more tan **200 users working coordinated in the 8 Andalusian provinces**.

Overall, the solution **eliminates repetitive and monotonous tasks** so that Andalusian Administration professionals can focus on **providing a more personalized service to citizens.**

4. Lessons learned

PARALLEL WORKING IN THE PROCESSES

Advancing the development of the processes in parallel to their definition made it possible to **implement them rapidly**, quickly resolving a high volume of requests, **speeding up the management of aid and making it available** to the citizens and companies in **very short periods of time.**

ROBOT IDENTITY

The **absence of human entity of robots** poses a challenge for **access to systems that require accreditation** as a natural person, which is a limitation when it comes to automating certain tasks.

SPECIALIZATION IN EMERGING TECHNOLOGIES

There is a **shortage of employees specialized in these technologies**. It is essential to provide **resources and training**, to carry out adequate change management and to incorporate **new technical profiles**, as well as to establish strategic alliances with the **private sector and universities**.

EFFECTIVE COMMUNICATION OF ASSISTANCE

The aid must be adequately publicized with **communication campaigns aimed at each target audience**. This makes it possible to **adjust the** expected **demand** for aid **for its correct distribution** among potential beneficiaries.

DISSEMINATION TO THE BODIES OF THE REGIONAL GOVERNMENT

The processes implemented through the intelligent management model must be **made known to the rest of the** Andalusian Regional Government **bodies**, so that they can **identify new opportunities for its application**.

5. Transferability and dissemination

This automation model is **replicable for all public administrations**, since **the requirements are largely the same and the processing model is similar.** It can be approached from two angles:

· **Methodology**, as it is easily applicable to any public organization at state, regional and local level.

· **Reuse of components**, for those data that are used by all administrations. The modules generated in the aid processes can be used in future administrative processes. For this purpose, good practices are defined, and a library of reusable automatisms is generated, for example, access and consultation of corporate tools or the automated processing of structured documents.

The **intelligent management** allows the **acceleration** when providing the aid thanks to the robotic execution of repetitive tasks and the intelligent treatment of documents presented by citizens.

Another aspect to consider when approaching the automation of a process is the **reduction of errors**. Most of the repeated tasks that a robot executes are related to querying, validating or recording data, which are very susceptible to errors and that carry an additional workload mainly due to the claims that occur.

6. ANNEXES
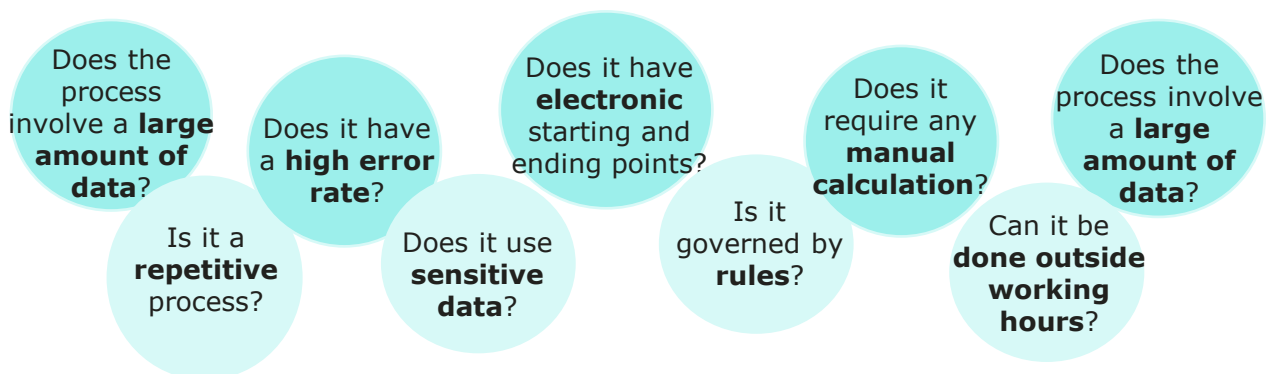6.1 Technologies used

Robotic Process Automation (RPA)

Robotic Process Automation (RPA) is the use of **robots or bots to perform specific and repetitive tasks in an automated way**. To do so, the robot first learns a series of rules based on algorithms, known as machine learning, **freeing the person from high-volume, routine and repetitive tasks**.

This way, public employees have more time to dedicate to strategic tasks, and the capacity of the administration is expanded with a **24/7 service and eliminating errors**, improving the experience of citizens.

Any task performed by a computer can be automated. However, some **questions must first be asked**:

The RPA allows **cost reductions of 10% to 40% per process**, providing the capacity to take on a **greater number of tasks, providing security and scalability**. Among the advantages that have been considered for implementing this technology in the aid management process are greater **agility** in the execution of processes, **cost reduction and increased quality of service**. In addition, since it does not imply a structural change in the systems, it allows **preserving the organization's infrastructure**, making it easier for the cultural change to permeate all its members.

In the case of processes such as this aid management process, **RPA is combined with Intelligent Document Processing (IDP) to enhance its document processing capabilities**.

Does the process involve a **large amount of data**?

Is it a **repetitive** process?

Does it have a **high error rate**?

Does it use **sensitive data**?

Does it have **electronic** starting and ending points?

Is it governed by **rules**?

Does it require any **manual calculation**?

Can it be **done outside working hours**?

Does the process involve a **large amount of data**?

6. ANNEXES
6.1 Technologies used

IDP

Intelligent document processing or IDP refers to the branch of automation focused on **document content processing**. It includes tasks such as revision, correction, analysis, validation, classification, data extraction, block extraction, decision making, etc., i.e., those usually performed by a document manager, excluding tasks such as digitization of paper documents to digital support, as well as encoding or decoding to optimize transport and storage, and the transport and storage of digital content.
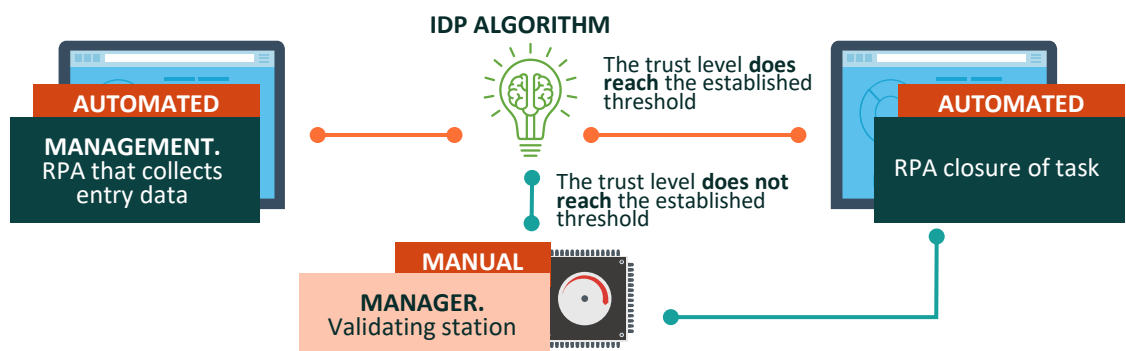
To carry out its function, the IDP relies on **Artificial Intelligence components**, which poses a number of challenges, including:

- The **difficulty in finding blocks of data to train the algorithms** prior to putting them into production. To this end, validation stations have been incorporated to provide all the data that the algorithm needs to make the prediction, or the input document from which to extract the information. Generally, there is an RPA that collects all the necessary information, then the AI algorithm acts and proposes the prediction. Otherwise, a person is in charge of collecting the information manually.

- The **confidence in the prediction returned** by the algorithm as a result. The predictions obtained have a confidence coefficient associated with them, which allows us to evaluate the percentage of correctness of the returned value.

- **Coordination of operational tasks to be performed by people that** could not be performed automatically.

The **validation** stations **and confidence coefficients** allow modeling of all RPA processes involving IDP algorithms:

IDP ALGORITHM

AUTOMATED

MANAGEMENT. RPA that collects entry data

The trust level **does reach** the established threshold

The trust level **does not reach** the established threshold

MANUAL

MANAGER. Validating station

AUTOMATED

RPA closure of task

There are numerous processes that take advantage of the **combination of IDP and RPA with AI** for **intelligent document processing**. For its part, the manager is responsible for the following tasks:

- **Classification of the document**, emails, etc. into predefined categories.
- **Exhaustive review and analysis**, validation and corrections of the document.
- **Extraction of** information **fields** that feed the systems.
- Content-based **decision making** that triggers new tasks.
- **Extraction of document blocks** for the composition of new documents.
- **Insertion of extracted data into** other systems and platforms for the activation of other processes and workflows.

6. ANNEXES
6.1 Technologies used

IDP

| Classify documents | Data matching | Extract information |

VERIFICATION OF DOCUMENTATION

Composed of several IA components, this service allows to **classify document files, extract data and information and cross-check them** with previous data **to verify the completeness and adequacy** of the documents that make up a request or email with attachments. It is composed of several key elements:

- **ML+IDP**: Supervised document classification, i.e., adjusting and training the algorithm with a set of already classified documents.
- **IDP:** Location and extraction of entities (tabulated and validated concrete data) in documentary files.
- **PLN** (Natural Language Programming): Text interpretation.
- **PLN**: Validation and normalization of entities.
- **Growing catalog of document types**: (EXTRACTOR IDP LEVEL 1, 2, 3, and MULTIDOCUMENT CLASSIFIER).
- **Management and monitoring** of work queues.
- **Scalability:** It is a parallel processing with high availability.
- **Optimization** of response time in on-line services (HA).
- Full **traceability** by case of document classification criteria.

IDP LEVEL 1 EXTRACTOR

This service is made up of the following components:

- **Scope Level 1 (SIMPLE):** Performs the automated extraction of data from structured and standardized (single issuer) documentary files of low complexity, with one or few pages. It offers the possibility of validating some data.
- **Catalog of document types Level 1**: It deals with identification documents from various countries, which incorporate data from ID and other credentials, as well as some standardized forms. It carries out the recognition of registration as self-employed, work life, certificates of being up to date with the Tax Body and Social Security. Standardized forms for applications for registration, hiring, cancellation, etc. are also susceptible to analysis.
- **Reliability scoring per case**, marking of documents and within each document data for manual review. Only documents or data with a reliability score below the tolerance threshold set for each process are reviewed manually.
- **Validation station** adapted and optimized for each type of document.

6. ANNEXES
6.1 Technologies used

IDP

IDP LEVEL 2 EXTRACTOR

Data identification service in document files that includes **data delimitation, extraction and validation**. It can be incorporated both in **backoffice and front-office** processes, optimizing response time. Optionally, a previous document classifier can be incorporated. It includes the following key components:

- **Scope Level 2 (MEDIUM):** Performs automated data extraction from **semi-structured, non-standardized document files of variable design** (different issuer), but with **common data blocks and data entities** of medium complexity. The length of the documents can be variable, but must have a certain level of structuring.

- **Catalog of document types Level 2:** documents such as orders, supplier invoices, payroll, pension certificates, bank receipts, banking, insurance, utilities, etc., are considered.

- Like the IDP Level 1 Extractor, it includes the elements of **reliability scoring per case and validation station.**

IDP LEVEL 3 EXTRACTOR

Service with similar characteristics to the previous one, but focused on the following key components:

- **Scope Level 3 (COMPLEX):** Performs automated data extraction from **unstructured, non-standardized, and variable design** (diverse issuer) **document files**, **without** easily identifiable data **blocks** and of **high complexity.** The documents have a high number of pages and have a wording, style, and legal language, or of a specialized domain.

- **Catalog of document types Level 3:** includes legal contracts, notarial mortgage deeds, auction notices, simple notes from the land registry, real estate appraisals, notarized powers of attorney, etc.

- Like the IDP Level 1 Extractor, it includes the elements of **reliability scoring per case and validation station.**

CLASSIFIED MULTIDOCUMENTARY

This is an advanced document classification scenario in which, in addition to **classifying the document, it must be segmented or delimited**, since it is part of a **larger file** made up of several consecutive documents, i.e., a multi-document. Segmentation and classification are performed in **a single step**. The service comprises the following components:

- In the most frequent case, **the variable length of each type of document** that makes up the multi-document **is treated**.
- In order to **delimit the beginning and end of each document**, comparisons are made between the contents of one page and the next, using various **combined techniques**: regular expressions and search patterns, business rules, computer vision, machine learning models, neural networks, etc.
- Like the IDP Level 1 Extractor, it includes the elements of **reliability scoring per case** and **validation station.**

6.2 List of requirements

REQUIREMENT	DESCRIPTION	CONSULTATION METHOD	DOCUMENTS	EVIDENCE
Current AEAT	Be up to date with the AEAT to obtain subsidies.	Web service query SCSP / IDP	Current AEAT Contracting	XML file resulting from the Web Service query is saved. Copy of the documents provided by the applicant when opposing the consultation.
Identity	Check first name and first surname match	Web Service Query SCSP / IDP	DNI and NIE	XML file resulting from the Web Service query. Copy of the documents provided by the applicant when opposing the consultation.
Current TGSS	Check if you are up to date with the TGSS (Social Security Tax).	WebService SCSP / IDP Query	Current TGSS payment	XML file resulting from the Web Service query. Copy of the documents provided by the applicant when opposing the consultation.
Current CCAA	Be up to date with the Autonomous Community.	Autogirolo	Current CAAC contracting	An evidence is saved with the clipping of the Autogirolo response file (file header and the record of the processed file).
CC ALTA	Checking account set up with GIRO	Autogirolo	N/A	An evidence is saved with the clipping of the Autogirolo response file (file header and the record of the processed file).
MINIMIS	Verify that the amount of aid received in the selected period together with the amount of the aid being applied for is equal to or less than 200,000 euros.	Individual web consultation	N/A	Two evidences are kept, a screenshot of the minimum query on the BDNS website (with the date and time when the query was made) and the Excel file that originates (only in the case of having received aid in the selected period).

6.2 List of requirements

REQUIREMENT	DESCRIPTION	CONSULTATION METHOD	DOCUMENTS	EVIDENCE
SANCTION SUBSIDY	Not to have been sanctioned for obtaining subsidies by the state administration, autonomous community and local entity.	Individual web consultation	N/A	A concatenation of 6 screenshots is made, two for each query of not having been sanctioned (by the state administration, autonomous community and local entity).
RPC REGISTERED	Not to be registered in the Public Bankruptcy Registry.	Individual web consultation	N/A	A screenshot of the query is saved on the RPC website (with the date and time the query was made).
CONTRACTING STATE (ROLECE)	Verify that there are no current prohibitions to contract with the State or that the expiration date is prior to the date of application.	Web consultation with certificate	N/A	Screenshot and PDF document are saved if there is a result of the query.
DATE ACTIVITY	Registration in the Economic Activities Tax before 03/14/2020 and at least until the deadline for submission of the application.	File Query	N/A	An evidence is saved in PDF format with the clipping of the query file.
EPIGRAPH IAE	Activity carried out (IAE) included in the DL	File Query	N/A	An evidence is saved in PDF format with the clipping of the query file.
FISCAL DOMICILE	Check that the tax domicile belongs to the Autonomous Community of Andalusia.	File Query	N/A	An evidence is saved in PDF format with the clipping of the query file.

6.2 List of requirements

REQUIREMENT	DESCRIPTION	CONSULTATION METHOD	DOCUMENTS	EVIDENCE
SANCTION DISCRIMINATION	Has not been sanctioned by a final administrative resolution for encouraging or tolerating discriminatory labor practices under current legislation.	File Query	N/A	An evidence is saved in PDF format with the clipping of the query file.
EQUAL SANCTION	It has not been sanctioned in terms of equal opportunity, non-discrimination and universal accessibility for people with disabilities.	File Query	N/A	An evidence is saved in PDF format with the clipping of the query file.
SANCTION MEMORY	He has not been sanctioned by a final administrative resolution for infringing, encouraging or tolerating practices against the democratic memory of Andalusia.	File Query	N/A	An evidence is saved in PDF format with the clipping of the query file.
Record of Temporary Employment Regulation	To have a Record of Temporary Employment Regulation authorized.	File Query	N/A	An evidence is saved in PDF format with the clipping of the query file.
PROHIBITION ON CONTRACTING CCAA	Prohibition to contract in the Autonomous Community.	File Query	N/A	An evidence is saved in PDF format with the clipping of the query file.
SALES DROP	Has suffered losses: the taxable income declared in the 2nd quarter of 2020 is at least 20% lower than that declared in the 2nd quarter of 2019.	Massive consultation / IDP	Mod. 184, Mod. 200, Mod. 303, Mod. 322 and Mod. 390	An evidence is saved in PDF format with the clipping of the consultation file, in the case of massive consultation. And copy of the documents submitted by the applicant in case of not evaluating the requirement through massive consultation.

6.2 List of requirements

REQUIREMENT	DESCRIPTION	CONSULTATION METHOD	DOCUMENTS	EVIDENCE
BUSINESS VOLUME	ANNUAL TURNOVER <= 50 MILLION €.	Massive consultation / IDP	Mod. 100, Mod. 130, Mod. 184, Mod. 200, Mod. 303, Mod. 322 and Mod. 390.	An evidence is saved in PDF format with the clipping of the consultation file, in the case of massive consultation. And copy of the documents submitted by the applicant in case of not evaluating the requirement through massive consultation. BUSINESS VOLUME
COMPANY IN CRISIS	Based on the information in Mod. 200, the calculation of Shareholders' Equity divided by Capital Stock must be greater than 0.5.	Massive consultation / IDP	Mod. 200	An evidence is saved in PDF format with the clipping of the consultation file, in the case of massive consultation. And copy of the documents submitted by the applicant in case of not evaluating the requirement through massive consultation.
TERMINATION OF ACTIVITY	Check by means of the employment history (A006 only for self-employed) if they have had a termination of activity after or equal to 03/14/2021.	Massive consultation	N/A	An evidence is saved in PDF format with the clipping of the query file.
ALTA RETA	Verify by means of the employment history (A006 only for self-employed) that you are registered in the RETA before 03/14/2020 and that you are still registered or have a leave date 4 months after the date of registration of the application.	Massive consultation	N/A	An evidence is saved in PDF format with the clipping of the query file.
WORKERS PERIOD	Verify that the average number of employees is <250 each year.	Massive consultation	N/A	An evidence is saved in PDF format with the clipping of the query file.
BALANCE SHEET	BALANCE SHEET <= 43 MILLION €	IDP	Mod. 200	A copy of the tax forms (Mod. 200) on which the requirement is evaluated is kept.

6.2 List of requirements

REQUIREMENT	DESCRIPTION	CONSULTATION METHOD	DOCUMENTS	EVIDENCE
ARTISAN REGISTRY	To be registered in the Register of Artisans of Andalusia.	File Query	N/A	An evidence is saved in PDF format with the clipping of the query file.
AID DL29	Not having received a subsidy under DL 29/2020.	File Query	N/A	An evidence is saved in PDF format with the clipping of the query file.
WORKERS DATE	Query average number of employees as of 4/13/2021 Verify that at that date the average number of workers is <251	Massive consultation	N/A	An evidence is saved in PDF format with the clipping of the query file (A008).
REGISTERED TOURISM	To be registered in the Andalusian Tourism Registry on 04/13/2020.	DB Query	N/A	An evidence is saved in PDF format with the query made to the database.
NUMBER OF SEATS	Check the number of vacancies as of March 13, 2020	DB Query	N/A	An evidence is saved in PDF format with the query made to the database.
REGULAR TRANSPORTATION	Check that the vehicles do not provide regular transportation.	Check that the vehicles do not provide regular transportation.	N/A	An evidence is saved in PDF format with the consultation performed.
YOUR AUTHORIZATION	Check that the vehicles have VD authorization.	File Query	N/A	An evidence is saved in PDF format with the consultation performed.
COOPERATIVE REGISTRY	Check that, in the case of cooperatives, the company is registered in the Registry of Andalusian Cooperative Societies.	File Query	N/A	An evidence is saved in PDF format with the consultation performed.
REAT	Verify registration in the Registry of Transportation Companies and Activities.	**File Query**	N/A	An evidence is saved in PDF format with the consultation performed.

6.3 Diversity of fields covered by IDP

Intelligent document processing makes it possible to **evaluate the requirements through documentation provided** by the applicant.

Below are some examples of **documents and their corresponding requirement to be evaluated**.

DOCUMENT	REQUIREMENT
ID	IDENTITY
NIE	SOCIAL SECURITY FLOW
Social security flow	AACC FLOW
AACC contracting flow	TAX AGENCY FLOW
Tax Agency Contracting	SALES FALL
Mod. 100	GENERAL BALANCE
Mod. 130	BANKRUPT COMPANIES
Mod. 184	BUSINESS SHARE
Mod. 200	
Mod. 303	
Mod. 322	
Mod. 390	