A platform for improving accessibility to health information and procedures



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Introduction



The use of technological tools is already so ingrained in our daily lives that it has contributed to facilitating significant improvements in terms of more efficient and convenient management for citizens. In addition, ICTs currently also play a crucial role in the health field. Various digital tools allow, for example, to monitor physical condition, record eating habits, control sleep, manage chronic diseases, etc.

For this reason, public health systems have also developed advances in digital infrastructures that, by **guaranteeing safe environments**, contribute to the **sustainability of the system**, to the improvement of the quality of services and to **patient autonomy**.

Among these technological and social changes, the emergence and widespread use of smart phones and apps is of great relevance, as is their contribution to the widespread use of online procedures and management. But also other web portal applications or telephone customer/user service providers, based on interactive voice responses and/or voice bots.



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Introduction

Simultaneously, the enhanced access to health information through ICTs has **revolutionized the patient's role.** This is especially evident among those who, besides seeking information and ease in their interactions with the health administration, are taking greater responsibility for **their self-care**, adhering to prescribed treatments, and making more informed decisions





- This is particularly advantageous for **senior patients**, who make up the majority of users of the Aragonese Health Service. It eliminates the need for travel, which is especially challenging in a **geographically dispersed region** like Aragon, where in-person procedures can be difficult to manage.
- Moreover, it helps to optimize public resources, streamlines the work of admission, information, and user support services, and significantly benefits healthcare professionals





The Salud Informa project targets citizens utilizing the public health system of Aragon and aims to enhance the efficiency of health functions within the Aragonese Health System. This initiative is managed and developed by the General Directorate of Digital Health and Infrastructure of the Department of Health of the Government of Aragon. Additionally, Salud Informa's activities are integrated within the Aragon Digital Health Strategy 2021–2026

The Salud Informa platform offers two types of access that complement or replace face-to-face procedures:

- **Telephone Access**: Salud Informa functions as a Contact Center (*Call Center*), providing personal telephone assistance and primary care appointment services through both operators and an **interactive voice response** (IVR) system.
- Online Access: The Salud Informa website and mobile app facilitate various online procedures and information
 consultations. These include managing primary care appointments, checking scheduled appointments,
 managing health cards, accessing prescription treatment sheets (for chronic medication), consulting surgical
 waiting lists, accessing reports and results of medical tests (including radiological images), and providing
 information and forms for other patient rights procedures.



Regarding its usage levels, the Salud Informa app stands out significantly. Primarily, it is a mobile app designed to streamline the management of users within the Aragonese Health Service. This includes functionalities such as consulting and managing medical appointments and securely accessing information stored in each patient's Electronic Medical Record.

As previously mentioned, the proliferation of smart mobile device apps make these digital tools ideal for **enhancing the user experience in health services**. Specifically, the Salud Informa app allows users to:

- Manage medical appointments
- Consult treatments
- Receive notifications (medication, appointments, public health notices)
- Consult surgical waiting lists
- Access reports and test results from clinical history, and more.







¿Qué necesitas?

Lo más consultado

However, the Salud Informa platform also includes:

 The web portal offers additional features beyond those available in the app and serves as a highly informative resource. It is currently undergoing review and updates to enhance its functionality and user experience.



 A telephone contact center with technological services for self-appointments and personal operators.





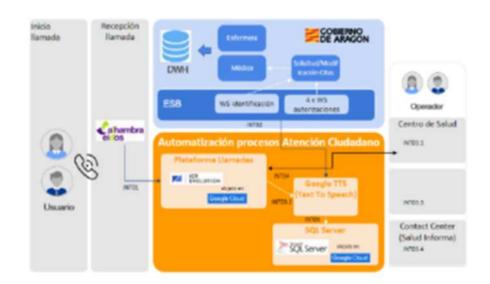






As regards **telephone access**, Salud Informa is currently defined as a **Telephone Contact Centre**. Since its inception, Salud Informa has had a *Call Centre* staffed by personal operators. However, this service has undergone significant technological developments in relation to an *interactive voice system (IVR)*, implemented in the appointment telephone of more than 40 Health Centres, which facilitates:

- a) appointment automatically (for 24 hours / 365 days),
- b) be attended by a Call Center operator (from 7 a.m. to 9 p.m. / 365 days),
- c) request the transfer of the call to the Health Center, during its business hours. (from 8 a.m. to 3 p.m. / weekdays)

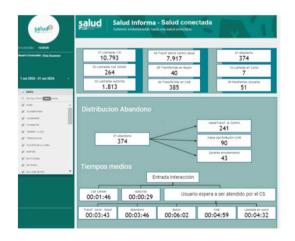




In such cases, if the call transferred to the Health Centre cannot be answered immediately, the user has the option to leave a voice message in the admission service's mailbox. To support this, the following complementary tools have been developed:

 The call transfer web portal (right image) serves as the tool used in the Admission Services.





• A data lake (which collects all the interactions of the IVR and the Contact Center) and which is presented in a dashboard (BI system) with interactive panels that allow monitoring with the visualization of the call flow, as well as its final result.



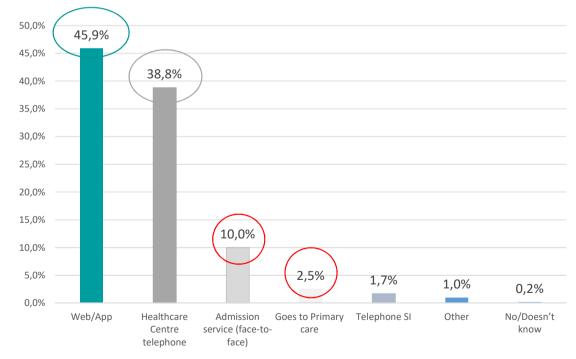
Basic data

Electronic means (as opposed to telephone calls) are increasingly the most commonly used means for carrying out health procedures. Specifically, the Salud Informa website and app are the most commonly used means (45.9%) for managing primary care appointments, as opposed to telephone calls (38.8%). For this reason, and given the positive effects in terms of system efficiency and the ability to reduce administrative workload, it is deemed necessary to continue promoting the

website and app.

Subjective data survey: What are the means used to select an appointment in Primary Care?

Source: User Satisfaction Survey, Primary Care 2023 edition. Conducted between December 2022 and July 2023. The sample is 23.420 primary care users





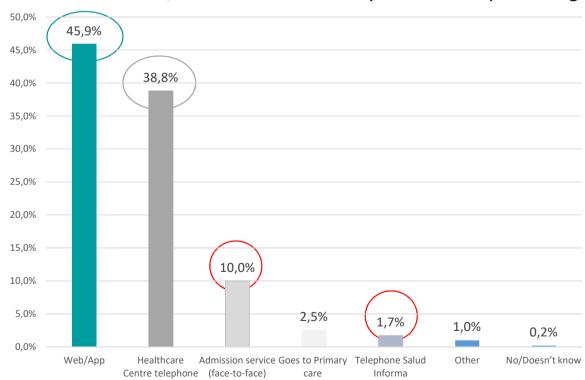
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Basic data



AT ESPECIALIZADA

Sus citas

Si no pudiera acudir a su cita, por favor, proceda a anularla a través de Salud Informa

Medicina de familia

Renovación medicación

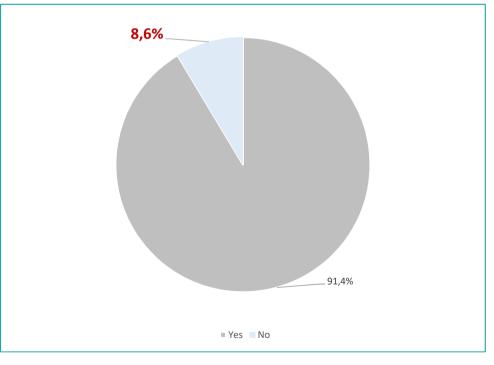
Enfermería

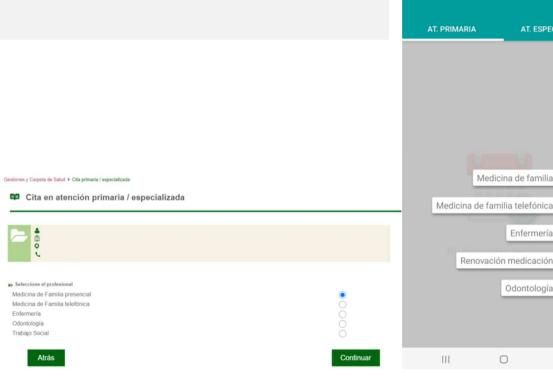
Odontología

AT. PRIMARIA

Subjective data survey: Do you know that you can also consult and make your appointments online (mobile app and/or Salud Informa web portal)?

Source: Survey conducted in 2023 with 384 users of the Salud Informa telephone service







Basic data

To access Salud Informa services easily from your mobile device, you must download and/or update the version of the app, which is available free of charge from (app stores) for smartphones and tablets, both for Android, iOS (iPhone) and even HarmonyOS (Huawei).

By accessing one of these app stores/markets (mobile software distribution platforms), and searching there for the Salud Informa App, you can download it for each type of smartphone. You only have to *click* on the "*install*" button in Play Store or on the "*get*" button in App Store. Also, in AppGallery Store for the most recent Huawei mobiles.









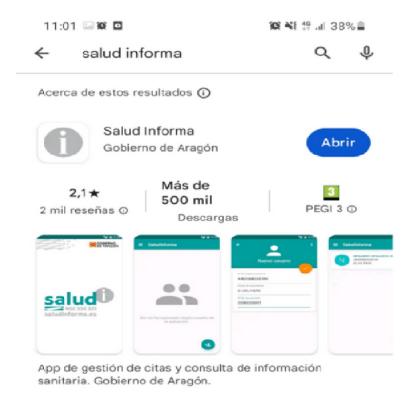


Basic data

The widespread adoption of Salud Informa, has led to a care demand download, as demonstrated by the **551.441 installations** recorded (Jan-2024), according to the "installed base" indicator from the Play Store, App Store, and App Gallery.

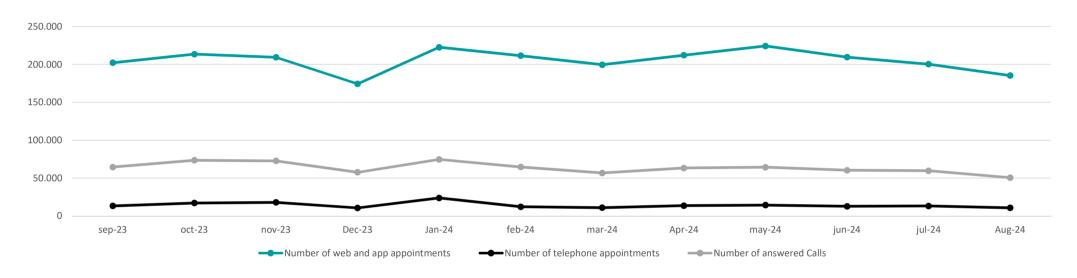
Of the 1.343.232 health cards, the **installed base would be 41%.** Considering, also, that a app user can add other family members. In addition, users of the Salud Informa website and/or telephones are added.





Basic data

Primary Care Appointments, Online (Salud Informa Website and App) vs. Salud Informa Telephone Appointments



| Indicator | Sep-23 | Oct-23 | Nov-23 | Dec-23 | Jan-24 | Feb-24 | Mar-24 | Apr-24 | May-24 | Jun-24 | Jul-24 | Aug-24 |
|---|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| Number of web and app appointments | 202.265 | 213.560 | 209.453 | 174.347 | 222.597 | 211.522 | 199.607 | 212.203 | 224.366 | 209.656 | 200.345 | 185.384 |
| Number of telephone appointments (IVR Self-Appointment and Call Centre operators) | 13.343 | 17.175 | 18.017 | 10.660 | 23.868 | 12.163 | 11.060 | 13.642 | 14.428 | 12.889 | 13.273 | 10.817 |
| Number of Calls Answered (Call Centre operators answered plus IVR answered) | 64.636 | 73.593 | 72.732 | 57.733 | 74.682 | 64.707 | 56.792 | 63.275 | 64.459 | 60.381 | 59.774 | 50.638 |

Datos básicos

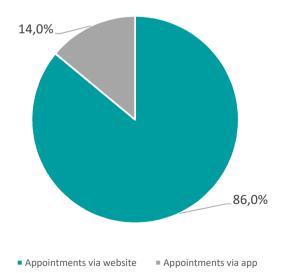
Primary Care Appointments, via mobile app vs Salud Informa website



The data on telephone appointments (both operators and IVR) and app-based appointments from January to August 2024, compared to other online appointments, indicates that the highest usage levels of Salud Informa are through its App.

However, this highlights the website's convenience, beyond an informational portal, is evolving into a **user-friendly** *web* **platform** (similar to the App) that will simplify administrative procedures and enhance usability.

| | Appointments via App | Appointments via website |
|----------------------------------|----------------------|--------------------------|
| Primary Care Doctor appointments | 1.243.585 | 205.530 |
| Primary Care nurse appointments | 169.925 | 25.387 |
| Odontology appointments | 11.628 | 1.554 |
| Social worker appointments | 7.299 | 722 |
| Total | 1.432.437 | 233.243 |





Basic data

Other relevant data: 2.426.691 SMS sent to access HC record and other health data (with PIN Salud) as well as the Ranking of the sections accessed by users

| My appointments | 28,4% |
|--|-------|
| Laboratory reports | 12,9% |
| Prescription sheet | 20,7% |
| Radio diagnostic images | 6,4% |
| Surgical Waiting List on File | 7,2% |
| Primary Care Record | 7,7% |
| Pathological Anatomy Reports | 4,1% |
| Basic information about your Health Centre | 3,9% |
| Emergency Discharge Reports | 3,0% |
| Colon and Rectal Cancer Screening Reports | 2,0% |
| Hospital Discharge Reports | 2,0% |
| Breast Cancer Screening Reports | 1,1% |
| Anticoagulation calendar display | 0,6% |
| Access to consult Document of Wills | 0,0% |



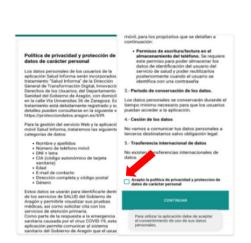
My Health Folder

App and Web functionalities

After the loading screen, when you launch the downloaded app, you will encounter **privacy policy acceptance** screens. These are necessary for the device (to download, store, and consult files) and **for the app itself for user** (to allow Salud Informa to access and consult each registered user's health data)









Subsequently, with an app already installed and a registered user, to **consult the privacy policy** you can use the following options, located in the menu in the upper left corner of the screen:

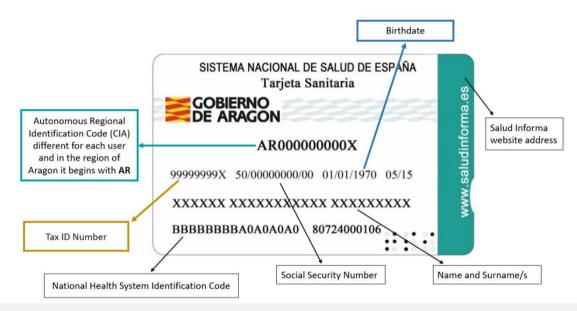
- Use of personal data
- Use of storage

WHAT MAIN DATA DOES THE HEALTH CARD INCLUDE?



App and Web functionalities

The registration data in the app, via a *Web Service*, is compared with the data registered in the **User**Database (BDU) of the Aragonese Health Service.



The application requires the **registration of the new user**, allowing the management of several users at the same time. For the registration of each user, over 14 years old, the application requires the following data:

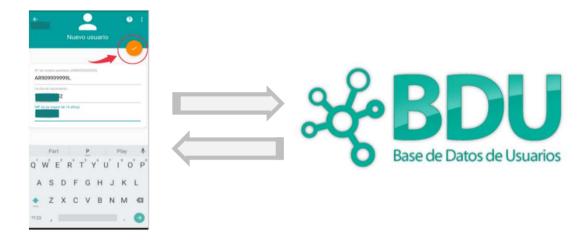


- a) Number assigned to Health Card (preceded by the letters AR),
- b) Date of birth and
- c) NIF (Tax ID Number); (ID number/Foreigners ID number) or, in the case of foreign persons entitled to health care, passport number



App and Web functionalities

User registration on the app requires the involvement and collaboration of the administrative staff of Salud, since only those who are listed as active users of the Aragonese Health Service in the User Database (BDU) will be able to register their user in the app.



BDU is an application and an important population database, connected to the National Health System (NHS), which requires maintenance by:

- the Admission Services (administrative staff form each Health Center) and,
- the three Health Card Units from the Provincial Services (Huesca, Zaragoza, and Teruel) of the Department of Health of the Government of Aragon.

In turn, any changes to user data (to avoid the recurring communication of supposed incidents in the app registration) will require updating the BDU: type of insurance, registration of ID number at age 4, transition from NIE to DNI, etc.



App and Web functionalities



Additionally, for the security and protection of users' health information, certain functionalities will require identity verification methods to allow access. For this purpose, **PIN Salud** has been created



The PIN is unique to each user and is requested and provided at the Health Center's front desk. The user must present a document that verifies their identity (NIF, NIE, Passport) along with their signed request. The administrative staff will then provide, through the BDU, a PIN associated with an updated and correctly registered phone number in the User Database.

PIN SALUD is a two-step verification system:

- It requires authentication with the health card number (AR) and the <u>PIN.</u>
- 2. Subsequently, a security code will be required, which the user will receive via SMS on their mobile phone and must enter in the app or website to gain access



App and Web functionalities







The app will also allow the possibility of registering the current PIN and entering a new one (which will require confirmation), making it easier for the user to remember this key.

The PIN must contain between 4 and 15 characters

It is recommended to use the maximum number of characters allowed (15 characters), combining letters and numbers, as well as upper and lower case letters.

- Never attach this code to your health card or any other document containing your health card number (AR00000000X). Please note that the combination of both allows access to personal data and data relating to your health status.
- For greater security, it is also advisable to protect your mobile devices with an access code.



App and Web functionalities

Another of the app's features is the ability to send users: notices, notifications and/or SMS messages.

- A digital tool has recently been created through which the Department of Health, and especially Public Health, can send notifications such as **temperature alerts** and/or **vaccination campaigns**, administrative procedures and management, or any other issue that requires a communication to users (for example, in image capture, **voice bot for appointment reminders**), etc.
- There are fewer cases of SMS (with an economic cost). Alerts are transmitted via notifications (push) of:
 - Chronic prescribed medication about to expire
 - Upcoming appointments for specialised care
 - Early detection program for colon and rectal cancer
 - Previously, PCR test results...





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App and Web functionalities

Requesting, consulting and cancelling appointments with various professionals of the Aragonese Health Service is one of the main functionalities in terms of its use and relevance for the health system. It is, in turn, a process designed to facilitate user accessibility, characterized by its ease of use.





All of this requires the interconnection of information, via web services, of the agendas of the Health Centers and their professionals (omiAP and, its evolution, in the case of our region towards GUHARA-Citas) with the app of each user (depending on their registered user (AR). Including HIS, in the case of specialized care appointments.



GUHARA-Citas



Global y Única Historia clínica de ARAgón / Global and Unique Medical Record of ARAgón



App and Web functionalities

As with the consultation of Specialised Care appointments, the same access mechanism (PIN) is required for consultation of the treatment sheet (HCE):

- By clicking this icon
- Hoja de tratamiento

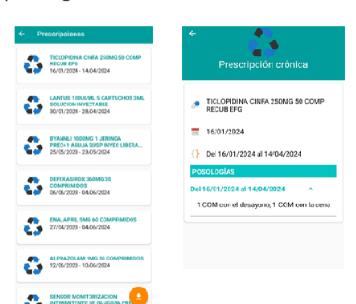
on the initial screen of each user of the application,

24/05/2029 - 20/01/2025

the screen will appear with the message requesting the PIN associated with the health card number (AR) of each user.

There is the possibility of **downloading** the treatment sheet (.pdf), to take into account prescription dates, and to recall:

- option (from the app menu) to activate notifications of chronic prescription medication close to expire date
- possibility of requesting an appointment to renew the prescription (via primary care appointments area).









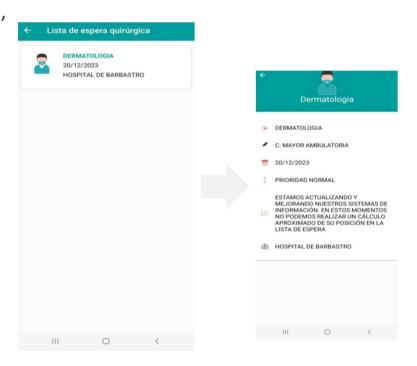
App and Web functionalities

The third option that is enabled with a PIN in the Salud Informa app is the surgical waiting list consultation.

By clicking on the icon on the home screen of each user, the application also requests the PIN and then indicates:

- Whether or not the user is registered on the surgical waiting list and,
- if registered, whether or not the operation is scheduled.

Sistemas de registro en Historia Clínica Electrónica (**HCE**) / Electronic Health Record (**EHR**) registration systems



App and Web functionalities





With PIN Salud, you can access the "medical record" section of the app, where you can view the EHR of each patient:

- Summarised Primary Care record (reasons for consultation, allergies, vaccines)
- Emergency, radiology, laboratory, hospitalisation and pathological anatomy reports
- Invitation letters / screening results (breast-colon)
- Oral anticoagulation calendar
- EU COVID digital certificate









Exclusive features of the Salud Informa website

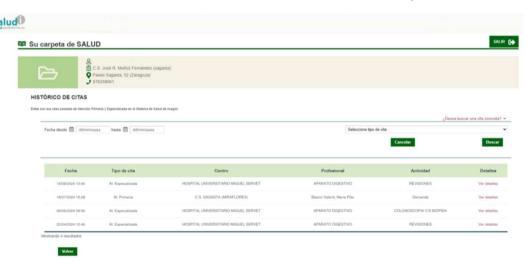
Salud Informa, via the web portal, also allows access to the **History of Specialised Care Appointments**, the **Advance Directive Document**, and to request access to **Radiology Images**.



One of the differences with the app is the ability to view the history of Specialised Care appointments via the Health Folder on the Salud Informa web portal.

To view the **complete Health Record**, health Data Protection Rules requires access using:

- Health PIN or
- Digital certificate or ID number or Cl@ve system *
- * Cl@ve is a system aimed at unifying and simplifying electronic access by citizens to public services. Its main purpose is to allow citizens to identify themselves before the Administration by means of fixed keys (username and password), to avoid the need to remember different keys for different services.



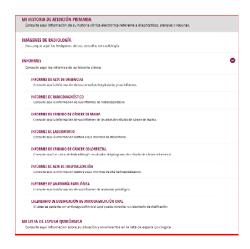


Exclusive features of the Salud Informa website



In the case of **radiology images**, exclusively (for the moment, and unlike previous functionalities) via the Health Folder on the website: https://www.saludinforma.es/

Once download is requested (in the corresponding section of the Health Folder), the user will receive an email (previously provided) notifying them of their availability in the Health Folder. The user will have approximately 48 hours to download the images: ZIP files that must be unzipped and viewed. Exclusively in a format suitable (DICOM) for X-rays.













Exclusive features of the Salud Informa website

The health card, as the identification document and proof of users' right to health care, must be kept up to date. To facilitate various card management processes autonomously and remotely, avoiding in-person visits to the Health Centre, you can use the Salud Informa web portal. Through **PIN Salud**, you can:

- Modify data: postal address, phone numbers, and email
- Change PIN: Update the PIN code obtained in person at the Health Center
- SMS notifications: Activate the option to receive information via SMS or email
- Request a new card: For cases of loss, breakage, or deterioration of the health card
- Register travel: Record temporary travel within the same Autonomous Community for up to 6 months, allowing automatic assignment of a family doctor in the corresponding Health Centre.





https://www.saludinforma.es/



Barriers to overcome

As indicated, the implementation of mobile applications and other web tools by regional and national health systems will contribute to their efficiency and to the improvement of the patient experience. However, digitalisation and change management, in reference to the digital transformation of health procedures and processes, goes beyond the development, design and usability of a mobile application. It will even transcend the necessary digitalization of the agendas of healthcare professionals (omiAP, Guhara-Appointments or HIS) and work on the management of unified or increasingly interconnected databases (Health Card – BDU, GUHARA - HCE, HCDSNS, etc.).

Some of the keys that, based on the experience of Salud Informa, could contribute to overcoming the resistance and obstacles of implementing tools would be related to:

- the work teams,
- resources and infrastructure and
- the users themselves to whom these tools are aimed to.



Barriers to overcome

Probably, based on the **intervention of all the parties involved**, it will be required to have resources and equipment for the redesign of the work processes of health centers, support and training for professionals, professional support for digitalization, usage tests and successive corrections. and technical support for the maintenance of digitalized services.

But, one of the key factors that can hinder or promote the success of the digitalization of the tools on which Salud Informa is based may be related to the need to address the resistance of administrative and health professionals from the beginning. For example, regarding the digitalisation of health professionals' diaries and their offer to the user as a self-appointment service.

Likewise, in daily management, this requires the involvement of all parties to configure the agendas in a certain way (different from those agendas that are controlled directly and completely from the Health Centre) or the awareness that at least certain medical reports or test results must be visible to the user.



Barriers to overcome

From the point of view of work teams, in general terms, they can refer to:

- Planning, Clear Vision, and Leadership: It's crucial to have a clear and shared direction that sets precise objectives aligned with the health system's identified (and even perceived) needs. Effective leadership will ensure the commitment of all involved parties.
- **Participation in Design:** Involving managers, administrative staff, and healthcare personnel in the design and deployment of digital solutions is essential. Their feedback ensures that technological tools are functional and adapted to the daily operations of health centres, which handle procedures and face-to-face patient interactions.
- **Information and Training for Digital Adaptation:** Preparing teams for digital change is vital to minimize resistance or preferences for traditional processes.
- Continuous Monitoring and Evaluation: This project won't end with the design and implementation of the app and website functionalities. The unforeseen needs of the health system and its professionals, along with the availability and use of technological tools, will necessitate ongoing corrective and evolutionary developments. Continuous monitoring and evaluation will be required to detect areas for improvement and make necessary adjustments.

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Barriers to overcome

Difficulties from the users' point of view

Finally, from the point of view of the users to whom these tools are aimed, and beyond the importance of guaranteeing the privacy and security of patient information, the experience of Salud Informa reveals two types of compatible perceptions in the same user profiles:

- A <u>critique of digitalisation related to the digital divide of older people</u>, given that these tools are not always seen exclusively as complementary to faceto-face channels
- A demand for progress and improvements in digital tools given the widespread use of ICTs and the ease of access they provide





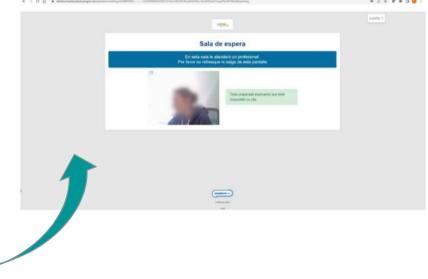
News and future plans

Promote the use of video consultation

In the case of the website (unlike the app), the **provision of video consultation** is also enabled as a way to develop a scheduled specialized care appointment that Hospitals and Specialty Medical Centres can enable at the patient's request.

There is a <u>user manual available to the user</u> for when the use of this benefit becomes more common among patients, and more health centers and services enable its possible use





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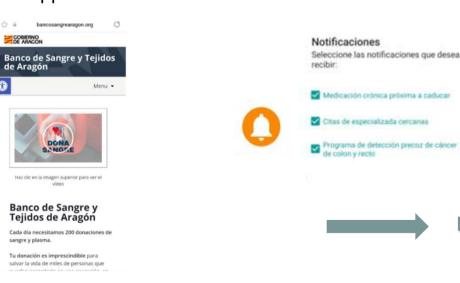
√ Fecha de próxima donación de sangre posible

News and future plans

Donor Calendar in app



Recently, access to the website of the <u>Aragon Blood and Tissue Bank</u> was introduced in the app. However, the objective is that in the long term this access will be a tool for donors where they can view their blood type, the <u>history of their donations and the next date from which they will be able to donate again</u>. These upcoming dates will also be notified through the app.



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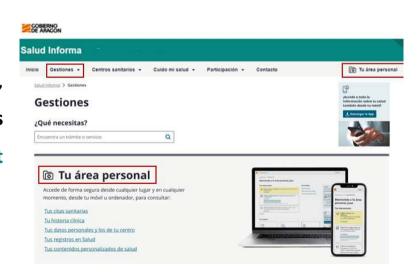
News and future plans

New Health Informa web portal

In the current web portal, many of the pages have a very low search percentage and, in turn, the excess of information that may be making it difficult to access the health procedures that users really require.

For this reason, the website is currently undergoing changes and evolution: https://www.saludinforma.es/

The new portal will focus on providing essential information in a clearer, more accessible manner with a cleaner design. **Inspired by the success of the app**, the goal is to **facilitate quicker access to management requests**, prioritizing user needs with a "What do you need?" approach.



The aim is also to provide a unified image between the web and the app, with a design optimized for mobile devices.





Contact information:

Dirección General de Salud Digital e Infraestructuras Vía Univérsitas, 36. 50017 Zaragoza

web.saludinforma@aragon.es

Huesca: 974 21 57 46

Zaragoza: 976 30 68 41

Teruel: 978 62 33 45

