

Boti case

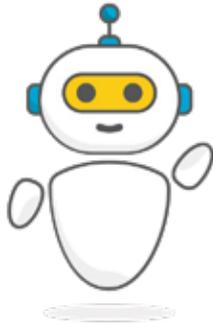
Buenos Aires City's chatbot



Secretariat of Innovation and Digital Transformation
of the Buenos Aires City Government



Buenos Aires City Government was the first in the world to use WhatsApp as a channel to talk, inform and answer concerns, requests and queries from its citizens.



The Buenos Aires City Government has been working for more than seven years improving the delivery of public services that respond to people's needs through different media and communication channels, simplifying procedures and reducing processing times.

Along this path, the City has been developing different digital products that respond to citizen's queries from their homes, without having to attend to a government office. **Government digital contact** with Buenos Aires' citizens has evolved through the incorporation of web products, mobile applications; and also, through the implementation **of conversational artificial intelligence (AI) solutions**, like chatbots that allow people to interact with government in a more efficient and humanlike way.

Why did we come up with a chatbot?

A chatbot is a virtual assistant that automates various tasks through a conversational platform, either from a phone or through a website.

Benefits are multiple:



24/7
availability



Operation
on different
platforms



Speed of
implementation
times



Opportunities
for continuous
improvement



Low
maintenance
costs

The goal?

To create an official channel that, through dialogue, would provide a simple, unique and personalised experience for all citizens.

Dialogue is the most common way in which people communicate and the greatest differential of the human race . It is usually immediate, with messages going back and forth in real time, so the speed of information flow is high and constant.

Which was the channel chosen to achieve this?

WhatsApp platform; the most used messaging application in the country, and with a penetration of more than 80% in mobile phones in Buenos Aires city.

History



The origins

With the aim of providing increasingly better solutions, Buenos Aires City Government worked on the development of a chatbot that would generate a valuable contribution to the relation between citizens and Government.

In 2012, the first chatbot in the city worked with a team of people answering every consultation, with a monthly average of 15,000 conversations.

During this phase, citizens could ask questions about procedures, request appointments and make complaints both on the web and through Facebook. The objective was to provide a complementary service to the phone line 147, the public telephone service channel of Buenos Aires City government for citizens..



Originally, this platform was designed as an inclusive tool to support citizens with hearing disabilities. For this purpose, and together with COPIDIS (Commission for the Full Participation and Inclusion of People with Disabilities), the team hired

suitable professionals - who in this case were also citizens with the same condition - thus turning the tool into a doubly inclusive proposal. The magnitude of the consultations showed that there was a great opportunity for the government, since the chatbot allowed channelling the demands of an even wider public, such as those citizens who prefer to use an alternative means to the telephone call.

A year later (2013), the Buenos Aires City's Government launched its first chat with Artificial Intelligence, more efficient and immediate and with a more accessible format. This new chatbot works with a semantic interpreter that helps understanding citizens' queries with the information to resolve their concerns, thus speeding up the time it took to make queries.

Within a year of its creation, the chatbot already had 300,000 unique users and a monthly average of 40,000 conversations.

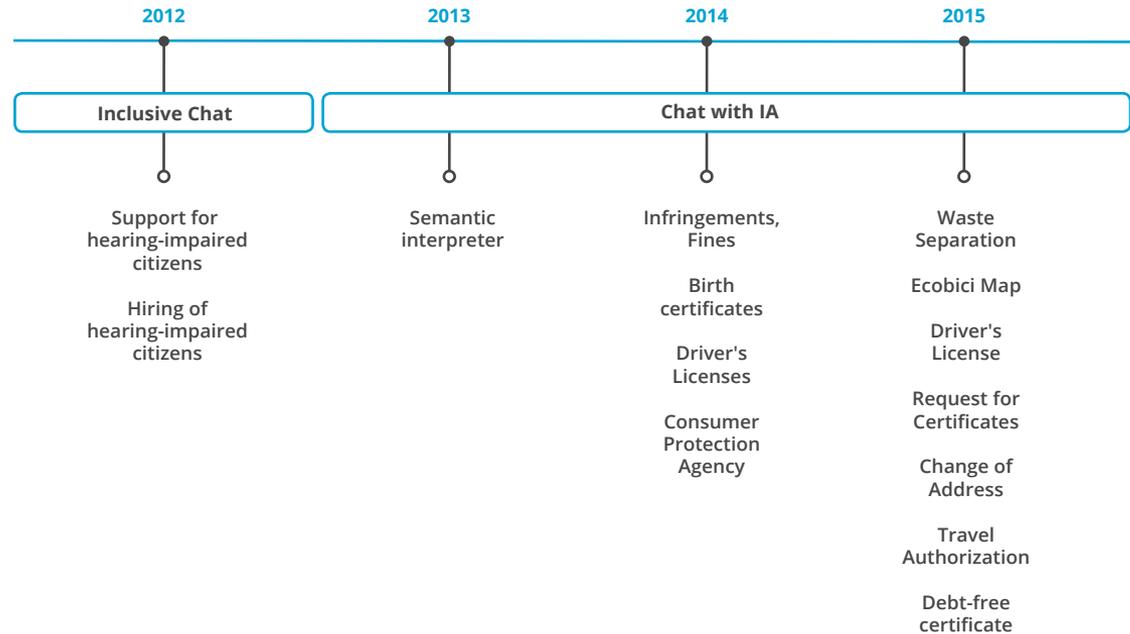
300 k
users during first year

The bot's growth was defined by the interaction with the user, based on the concept of "organic growth". As the citizens asked questions, the content was refined. The cost of this strategy was that whenever a user asked a question for the first time, the system might not know the answer; but the second time that same question was asked, the missing answer would have been detected and its answer would already have been incorporated.

In 2015, the level of conversations reached an average of 2,000 per day, reaching more than 60,000 per month, with queries on a variety of topics, such as waste separation, maps with the location of Ecobici stations, Driver's License Renewal, Request for Certificates, Change of Address, Travel Authorisation and Debt-free certificates.

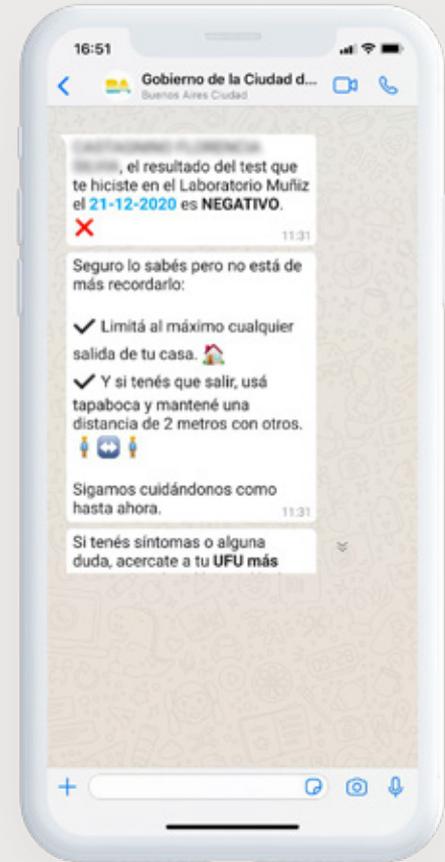
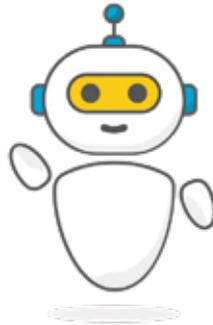
By 2015 the City already had four channels to communicate with its citizens: the BA 147 application for mobile devices, the 147 phone line, the virtual chat with AI and referral to human operators, and finally, email. In this way, users could save time by calling, typing or sending an email instead of carrying out a procedure or making a complaint in person. Out of all the queries received by the City, 82% were resolved through the Artificial Intelligence chat via the web and Facebook, making the telephone lines less busy. Citizen services were improved with the incorporation of virtual agents such as Lau and Nico, who by that time were already answering queries on 200 procedures via chat, with only 18% of complaints being referred to human operators.

Background: towards a chatbot of the City

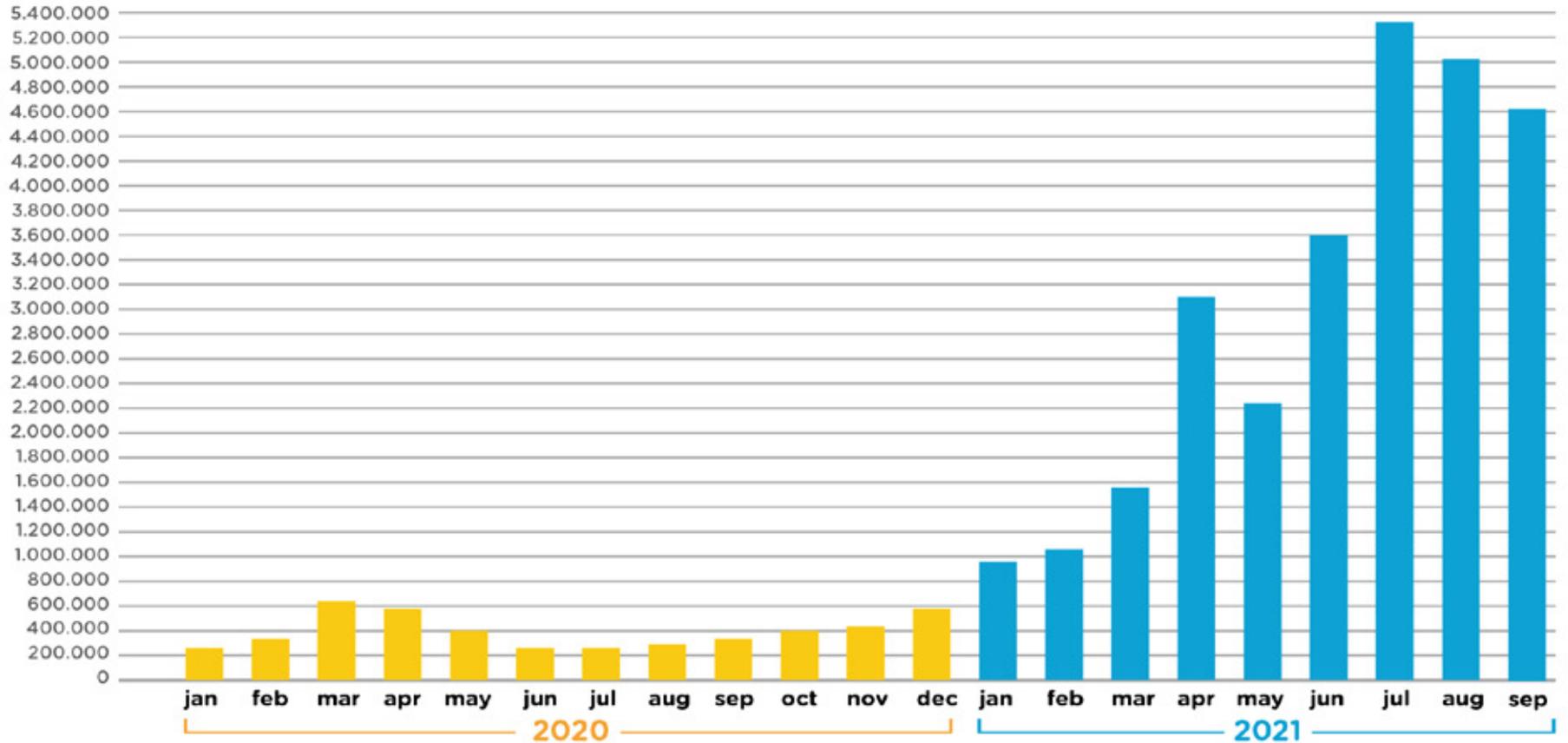


With the emergence of the COVID-19 pandemic, WhatsApp decided to open the API to all governments and governmental organisations with the aim of keeping citizens informed about measures to prevent the spread of the virus and to raise awareness about care to prevent the disease. Consequently, different entities around the world have worked on the implementation of exclusive health chatbots, such as the World Health Organisation's or the Spanish Government's, with the intention of offering updated data, answering queries about symptoms, providing emergency telephone numbers and information on isolation, teleworking or urban mobility. In this regard, the City of Buenos Aires only had to incorporate the specific content related to COVID-19 and carry out the necessary integrations in its chatbot, where it already had a wide variety of information and services aimed at citizens.

It was essential to integrate WhatsApp into our protocol for COVID-19.



Number of **conversations**



03

A new way
of working

WhatsApp First

During the process of **development and adaptation** to the new interface, limitations and advantages were found, related to the infrastructure, content and design possibilities of this platform.

First and foremost, the government adopted a strategy under the **WhatsApp First** concept, based on its market breakthrough, its positioning in the country and the daily use by the citizens of Buenos Aires. In this way, the design of the user experience and interfaces had to be thought first to be applied to the resources available in this channel and, also, that it could then be replicated in the rest of the available channels.

The great advantages of the platform lie in the possibility of incorporating multiple services, the speed of implementation times for integrations and the low maintenance costs, which allows for easy scalability.



The move to a platform based exclusively on the use of speech forced the team behind Boti to make a leap in quality.

The concept of how to work with a chatbot changed with the arrival on the messaging app. Having a much more limited design in terms of resources and being purely text-based, it forced the team to work on the exchanges in the conversations, and to come up with concrete and quick answers based on keywords, minimising errors or "not understood" messages. Given that the team was going to work only with text, it was essential to think about the messages from an empathetic point of view in order to maintain the bond of closeness with the user. This is the key to the platform's success.

Another limitation that the Design and Content team had to overcome was the absence of quick access buttons, as offered, for example, by Facebook Messenger, or the option of image carousels that allow information to be displayed in a more visual way. Based on exhaustive work and content analysis, menus of options were generated, as well as concise, clear and organised messages.

On a functional level, one of the main challenges in using the platform is testing, as the technical support in a chatbot is very different from that of a traditional software product. In bots,

conversations are tested and, as a dialogue becomes more complex, it is possible that situations may be left uncovered or covered incorrectly. Therefore, the team is continually tasked with running different tests to ensure that the bot does exactly what the team expects it to do.

In the digital world, it is often said that "content is king". From the experience with WhatsApp, the City today confirms that **"the channel is king"**. The application as a new means of contact showed how certain segments of society began to converse with Buenos Aires through Boti. For instance, the younger segments, those who are already used to chatting and using digital tools. But also, as the project progressed and the metrics obtained were worked on, it became clear that for the older adult segment, WhatsApp did not represent any barrier whatsoever. On the contrary, it was a platform with which they already had experience and was incorporated into their daily lives. The level of interaction of the elderly through this chatbot is an excellent indicator, especially if we take into account that this segment traditionally opted for the service of human operators, either as a matter of trust or because they felt safer interacting directly with a person rather than a machine.

"The main challenge in WhatsApp is to make the **best possible integration** and scale in infrastructure."

Florencia Castagnino

chief of staff at the Undersecretariat of Smart City

"Boti is a **very accessible tool**, because it coexists in channels that most citizens already use. And using it on WhatsApp is as simple as adding the number and starting to chat."

Ernesto Kern

former undersecretary of Smart City



Ahora la Ciudad en tu WhatsApp.



Misión de Asistencia Tecnológica Centro de Buenos Aires



Vamos Buenos Aires

Personality



In search of the ideal personality

The personality of a chatbot is very important because it allows people to feel a closer bond with the service.

As chatbots evolve and become capable of responding to multiple queries, people are looking for increasingly closer and more personalised conversational experiences. According to Deloitte's 2017 Conversational Chatbots report ¹, users are more comfortable chatting with a bot that provides a more human experience, has an avatar and is empathetic during the conversation. At the same time, a study by Liveperson ² indicates that human assistants continue to be the most popular choice when it comes to queries, although the preference for bots is growing, especially among younger audiences.

Today, the challenge for developers is to ensure that virtual assistants offer users the experience they are looking for, while conveying warmth and empathy. The creation of a

personality is what allows bots to be endowed with values, language, tone and style, which makes them much more relatable. In this way, they generate an emotional and personalised connection through conversations, a characteristic that brings them closer to becoming users' favourite communication channel.

300k

citizens became users of this **online service** between augusto 2013 & july 2014

1. Deloitte, 2017. *Conversational Chatbots, Let's Chat*

2. Liveperson, 2019. *Consumer preferences for Conversational Commerce report*



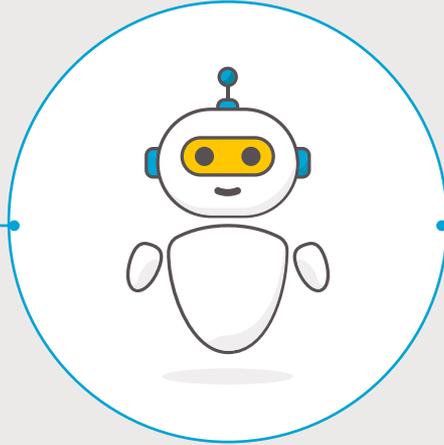
Honest

It does not judge the citizen.
It is humble. It doesn't ramble.

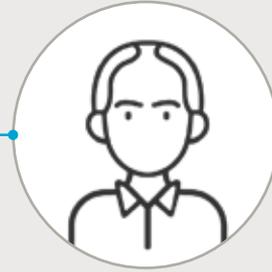


Decisive

It doesn't hesitate.
It uses strong verbs
to express ideas.

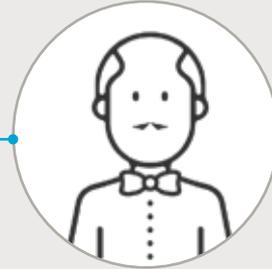


Boti's personality attributes



Didactic

It doesn't use technical
language. It transmits enthusiasm.



Helpful

It shows that it wants to help.
It asks questions to guide,
but does not push. When talking,
it shows that we are a team.

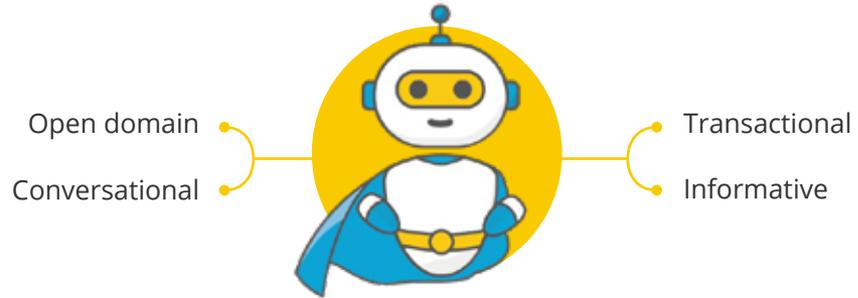
Platform



Product Main features

There are technologies and processes available which allow us to improve the bot's level of response, as well as to continue to add new possibilities for interaction with citizens.

Boti is a superbot or generalist bot that answers the queries of more than 6 million people (3 million inhabitants of CABA plus 3 million inhabitants entering the City from GBA) about services, procedures and events in the City. In other words, unlike a bot with a specific objective, it generates responses of all kinds with a wide range of content, as it has an open domain. In addition to allowing users to interact freely, it processes their messages and provides them with answers to their queries through the use of Artificial Intelligence systems, thus becoming a conversational bot. Another great advantage over other bots is its transactional characteristic, as it interacts with external systems to provide a specific response; in this case, about services available in the areas of government and external entities such as, for example, the weather. It is also informative because its content is aligned with the current situation of the city, constantly adapting to changes and new developments.



SuperBot



Artificial Intelligence

The first incorporation of Artificial Intelligence in the City's chat (chat 147) was carried out in 2014 through an automated response and semantic interpreter that helped understanding when exchanging information and concerns with citizens. Following the arrival of Boti in 2019, the process was accelerated and improved with the implementation of a natural language understanding engine programmed with Artificial Intelligence and Machine Learning. In this way, Boti is not only able to execute what has been predefined but can learn, improve and adapt to each user through these technologies and natural language processing.

While it is not possible to intervene in the internal processes of this Artificial Intelligence engine, the team works on generating suggestions and improving the contents so that Boti can work with the least number of obstacles and confusion.

Artificial Intelligence Tools

The most important Artificial Intelligence tool that the bot has is the message understanding engine that works through Google's Speech to Text platform; this allows it to reproduce human speech artificially, analysing different aspects of the conversation. The key to the improvement of the engine is the

continuous retraining of the AI algorithms, feeding them back to each conversation and transactional data. As a result, Boti recognises if the user sent a voice message, first identifying the number of characters in order to define if it is a short audio and, in that case, advances in the recognition of its content. Otherwise, if the audio is too long, Boti will not be able to recognise the query and warns the person to send it again with fewer words.

Another type of AI incorporated in the bot is image recognition through the Microsoft Azure service. This technology allows it to perform and improve automatic object detection to identify, for example, if a car is parked incorrectly. In order for it to work efficiently, the bot must be trained by loading and tagging images so that it becomes increasingly accurate in analysing the pixels and patterns of an image so as to recognise it as a particular object.

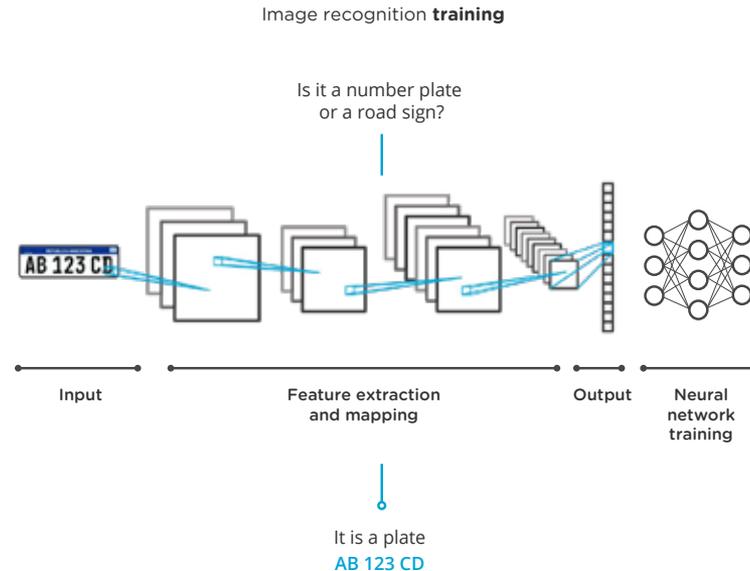
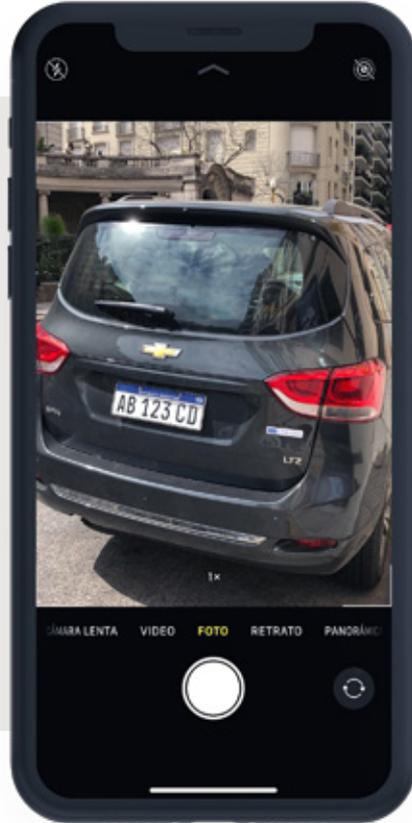


Image recognition training



For a week, the team took different photos on the public road with the intention of training the bot to begin to recognize vehicles, license plates and signs, as well as to distinguish between different models of each of these elements. This was the first processing carried out in Boti linked to this tool, to correctly identify the images sent by citizens when making a road complaint.

To achieve this recognition, a pre-training of the system is required. From the creation of a neural network, where images of already labelled objects are inserted, the system analyses them in order to recognize their patterns for faster labelling.

The system is trained over time. As new images are inserted, and based on a large number of filters, it discards objects that do not meet the patterns of the labelled images as a reference. The process continues until it finds an object that finally matches the labels.

Another tool is text recognition. This technology makes it possible to obtain the written information of a text from an image. The process consists of taking the image and reading it character by character. First, it transforms the image into black and white for better readability. Then, it compares each character individually with the most common text formats in order to find similarities and identify them. Lastly, the process puts the identified letters together and forms the words. For those cases in which the system does not identify a letter of a word, it has its own dictionary, where it searches for the most appropriate letter and selects it.

Through the Microsoft Azure platform, we are also working on sentiment analysis with the intention of understanding the mood of users when they make queries on various topics. This technology makes it possible to analyse texts and identify keywords, the language or the way in which the user writes, with the aim of understanding what the person is thinking or desires and providing him/her with an answer based on this information. The system analyses the text, separates it into sentences and entities to identify related topics and phrases, give them a positive or negative score and finally, determine the sentiment of the message, which can refer to either a good comment or a complaint.



Communication with the user

A chatbot connects with the user through the messages; these can be a button, a text, an image, a video, a document, an audio or a link -among other elements-, depending on the channels used. As WhatsApp is Boti's main channel, the way in which its content and conversational flows are constructed is restricted to the limitations of the types of messages that this channel allows.

When it comes to answering citizens' queries and concerns, Boti does so through three tools: content, integrations and referrals.

Content

While as a conversational experience all information contained in Boti can be considered "content", this term is used to represent static information flows that do not contain integrations or derivations.

Static content comprises most of Boti's knowledge, coming from the different areas of government interested in making their information available in the chat. It is the product of an editing process that takes into account grammatical (syntactic and semantic) and usability criteria, in order to adapt them effectively to the chatbot's conversational format and guarantee their correct functioning in the different communication channels.

Taking into account both the queries of the citizens and the

information that the Government wishes to provide, we define the content that Boti will have. The information reaches the team of editors in two ways: it is requested directly to the corresponding government area or it is the area that proactively sends it to be incorporated into the chatbot.

In this way, the growth of content in Boti occurs in four situations:

- | in the interaction with the citizen requesting information (organic growth);
- | when the government areas provide the information (organic growth);
- | in anticipation to known events, such as winter holidays;
- | conjunctural factors, as happened with the emergence of COVID-19.

Integrations

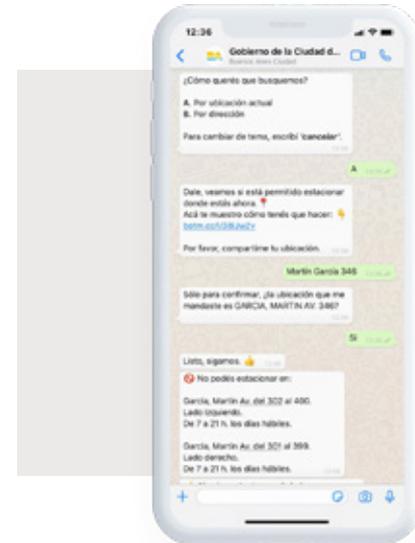
Part of Boti's intelligence lies in the fact that it can **connect with different available web services**, either those developed in conjunction with the Government areas or those that were developed externally and are "open", such as, for example, the Tweather service. These services are aimed at providing a personalised response based on the information provided by the user.

The connection from the chatbot to the web services and the reception of the necessary parameters for processing and making the final response available to the user is carried out through the definition of a conversational flow. In the flow, the

bot asks a series of questions to the user to gather all the information it needs in order to make the call to the service, and when it comes to providing the answer, it defines how it will be displayed with a series of predefined messages.

For instance, the citizen can ask Boti if parking is allowed in a certain place in the City.

To provide that answer, the chatbot connects to the geo-referenced map of CABA, through the parking regulations API developed by the Transport team and the Geographic Information Systems Unit of Buenos Aires city. With this information, Boti verifies the address provided by the resident and offers the specific information provided by the map.



Referral

The referral process is similar to that of Content and Integrations, although it has the particularity that the citizen may be referred to interact with human operators who will take care of his/her needs. These operators belong to the service referent area, such as violation controllers or those responsible for containment in matters of gender-based violence, among others.

When the referral begins, the bot makes it explicitly clear that the waiting flow is initiated and that the user will subsequently be able to talk to a person. At that point, the bot does not respond until the conversation is taken by the operator or the user informs that he/she can no longer wait.

Security and ID validation

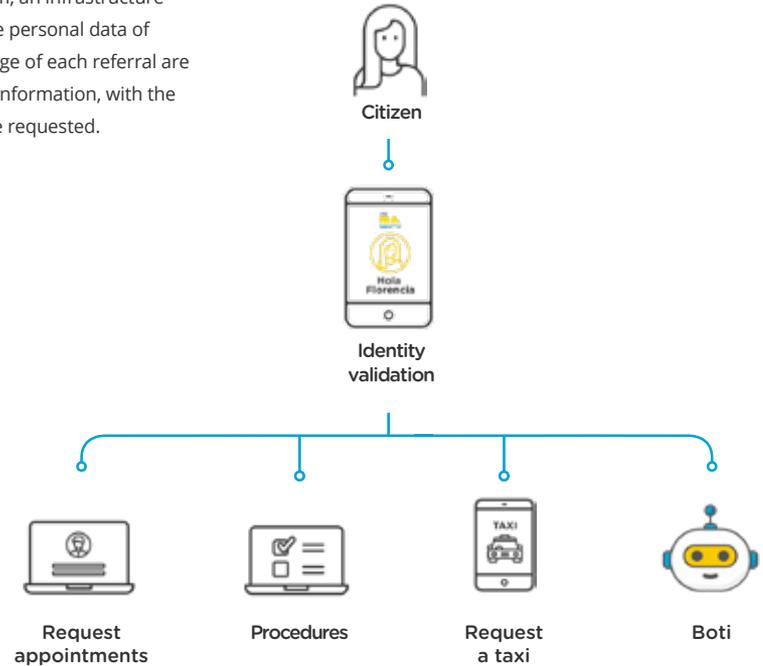
In certain cases, such as reporting an illegally parked vehicle, contacting a 147 operator or checking pending infractions, Boti asks the citizen his/her personal data in order to respond to the request or assist him/her in carrying out their procedures.

In such situations, identity validation is carried out through MiBA (miba.buenosaires.gob.ar) in order to obtain greater data certainty and simplify the process. This is the registration and login tool for all the applications of the Buenos Aires City

Government, so that with the same registered user, the citizen can carry out a procedure on the web, order a taxi through BA Taxi or, in this case, identify him/herself at Boti to receive assistance.

Data privacy

In relation to the security of the platform, an infrastructure was created for the secure access to the personal data of users, from which the operators in charge of each referral are the only ones authorised to access the information, with the aim of resolving the query or procedure requested.



Services



Services offered

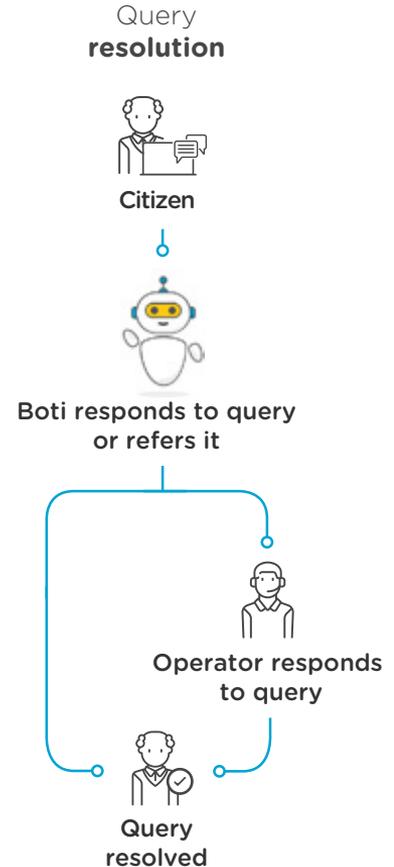
The evolution of the chatbot allowed the incorporation of new functionalities to provide better services to the citizens and, at the same time, to provide support to different areas of the government.

Services

They can be either internal, i.e. developed together with other areas of government, or external, such as the weather service. These are predefined messages that are offered to the users, based on a series of questions asked by the system in order to provide them with an answer regarding the service consulted.

Referrals

This involves a similar process to that of Services, but with the particularity that the citizens may be referred to human operators, if necessary, in order for his/her query to be resolved.



Health Care

- **COVID-19 Triage**
Ministry of Health

The system provides citizens with a tool that allows them to make an initial assessment of their symptoms and state of health with regard to the diagnosis of COVID-19, according to the protocol established by the Ministry of Health of Buenos Aires city and the updates of the World Health Organisation. It provides referral to SAME - 107 (Emergency Care Medical System), a physician and the nearest UFU (Febrile Emergency Unit).

- **Nearest UFU (Febrile Emergency Unit)**
Ministry of Health

The system identifies and indicates the nearest UFU (Febrile Emergency Unit), based on the location or address the citizen shares in the chatbot.

- **Nearby pharmacies**
COVID-19 Situation Table

It locates and provides citizens with information on the nearest pharmacies, according to the location or address entered.

- **CeSAC Consultation** (Health and Community Centre)
Ministry of Health

It allows citizens to consult the location, telephone number and opening hours of the Health Centre-Level 1 that corresponds to them.

- **COVID-19 Open Data**
Ministry of Health, Undersecretariat of Open Government and Accountability

Citizens can consult daily updated official data on the epidemiological and health situation in the city: new cases, discharges, deaths and tests carried out, as well as the availability of beds in hospitals, hotels and shelters.



Health Care

- **COVID-19 Vaccination**
Ministry of Health

Citizens can consult on the national vaccination plan against COVID-19, its implementation and different stages defined on the basis of specific epidemiological criteria. At the same time, the bot allows them to request an appointment for the application of the vaccine, it sends them an automatic notification to confirm the day, time and place of vaccination, and issues a reminder 24 hours before the appointment.

- **Covid-19 Vaccination certification**
Ministry of Health

Citizens and residents can have their Digital COVID Certificates through WhatsApp. It shows the COVID-19 vaccinations and the last PCR test result. Boti also gives a QR Code to verify the veracity of the information.

- **COVID-19 test results**
Ministry of Health

The feature allows users to receive the PCR test result on WhatsApp, performed at any public testing centre. When you test for COVID-19, you must supply the healthcare worker with your correct cellphone number. Then the information will be picked up from the lab form and you will be informed of your test result on WhatsApp, whether positive or negative.

- **Vaccination stations**
COVID-19 Situation Table

It locates and provides information on the location of the nearest vaccination station to the citizen's home according to the location or address entered.



Urban Mobility

- **Permitted parking**

Secretariat of Transport and Public Works

The user can verify the location, exact addresses or street intersections as well as what parking rules apply for any address in the City. Also, the system informs where metered parking operates. In this way, citizens and anyone visiting CABA, can check this information through WhatsApp immediately 24 hours a day, 365 days a year, in order to improve traffic order and coexistence in the streets.

- **Ecobici stations**

Secretariat of Transport and Public Works

The system informs users about the location of the Ecobici stations, available bicycles and free racks for their return at all stations or those closest to them, depending on the shared location or address. Also, users can access information on registration and system operation; with the aim of promoting sustainable mobility in all neighbourhoods and reducing traffic congestion.

- **Underground status**

Secretariat of Transport and Public Works

The system provides information on the real-time status and operation of the service of all the lines of the underground public transport network and, in this way, the user can know the service frequency and when the next train will arrive, with the aim of improving the user's experience.

- **Traffic restrictions**

Secretariat of Transport and Public Works

Citizens can consult on the status of road closures in the City, based on the current location or neighbourhood. This service provides real-time information on road closures due to scheduled public works and police operations, among other incidents. It also alerts when traffic lights are out of service or any other event that affects mobility, with the aim of helping the circulation of vehicles and speeding up traffic.



Assistance and support

- **Gender-based violence (144)**

Ministry of Human Development and Habitat

The system provides information on the available options for support, counselling and complaints, and it enables the contact between the user and the team of professionals of the 144 phone line in matters of gender-based violence.

- **COVID-19 Family Support**

Secretariat of Citizen Development

It provides citizens guidance and family counselling in order to help them with the difficulties of coexistence generated as a result of and during the period of Social Preventive and Compulsory Isolation, offering care and support from professionals through the same chat.

- **Senderos Escolares (“School routes”)**

Secretariat of Communication, Content and Citizen Participation

It provides information to students and parents on the most convenient and safest routes to and from school. It enables the user to search for the City's school routes by address or by school and it offers the possibility of submitting a proposal for the creation of a new route.

- **Line 102**

Council for the Rights of Children and Adolescents

It provides free advice to the children of Buenos Aires city about their rights through contact with operators of the Council for the Rights of Children and Adolescents. This service is available 24 hours a day through WhatsApp.



Complaints

● Road Complaints

Secretariat of Citizen Care and Management of Municipal Urban Divisions (comunas)

The system allows the user to file and speed up complaints on certain traffic offences that are very frequent and affect coexistence, they can easily be accompanied by photographic evidence, such as a vehicle parked incorrectly.

- | Parking next to a yellow kerb
- | Parking obstructing ramp / reserved space
- | Parking obstructing a pedestrian walkway
- | Parking space for bicycles
- | Parking on green spaces
- | Double or triple parking
- | Parking obstructing a bicycle lane

● Public Prosecution

Public Prosecutor's Office

It offers citizens the possibility of finding out the status of complaints they have filed with the City Prosecutor's Office, and also to generate new complaints within the following categories: Gender Violence, Harassment, Drug Trafficking and Environmental Crimes.

● Quarantine Violation COVID-19

Secretariat of Citizen Care and Management of Municipal Urban Divisions

Citizens can report non-compliance with the compulsory quarantine, both of individuals and of commercial establishments or premises, such as events, gyms, clubs, cinemas, theatres, etc. The report will be sent to the Sistema Único de Atención Ciudadana - SUACI (Citizen Care Single System.)

● Removal of abandoned cars

Secretariat of Transport and Public Works, Department of Citizen Services and Management of Municipal Urban Divisions

It allows citizens to report an abandoned car by sending a photo and the address where the vehicle is located, so that the City Transport Department can remove and haul it away.



Information and enquiries

- **Local services**

Innovation and Digital Transformation Secretariat

The system allows citizens to consult all types of establishments near their current location automatically, as soon as they share their location or address with the chatbot. It identifies available organisations and entities such as police stations, fire stations, municipality division offices, banks, WiFi hotspots, among others.

- **Postal Code**

External product. Official Post Office of the Argentine Republic

Citizens can check the postal code associated with the current location or the exact address shared to the chatbot.

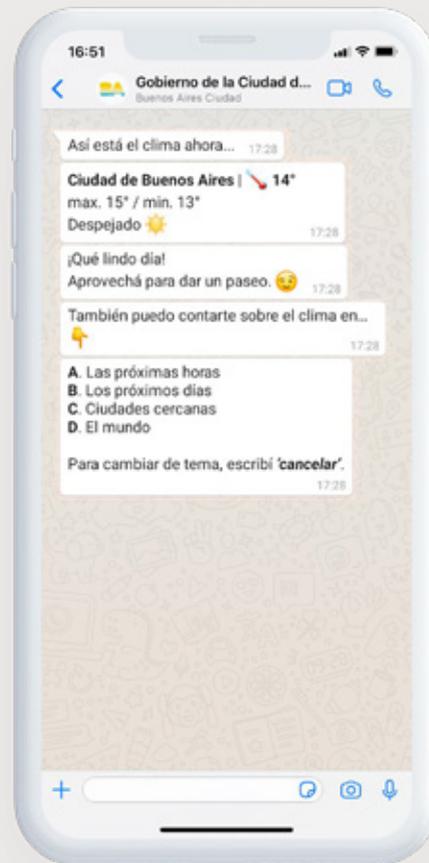
- **Weather**

External product. Ministry of National Defence

It provides citizens with information on the state of the weather; offering the following possibilities for consultation: current weather; weather in the following hours; weather in the following days; weather in nearby cities and in the world.

- **AGC (Government Control Agency) Inspections**
Ministry of Justice and Security

It allows users to access relevant information and to know in advance the date of scheduled comprehensive inspections of establishments associated with the commercial activity of a company or person. The user must indicate the address to obtain this information.





Citizen Management

● Referral to 147

Secretariat of Citizen Care and Management of Municipal Urban Divisions

Citizen Care channel (Line 147) available through the chatbot, the system has the possibility of referring the user to a human operator in the event of a user request or when the bot does not understand the message after three consecutive attempts.

● Request Status

Secretariat of Citizen Care and Management of Municipal Urban Divisions

Citizens can check the status of requests uploaded to the City's Citizen Care Single System. For instance, Cleaning and Collection, Lighting, Streets and Sidewalks, among others.

● Status of MOT inspection (VTV in Spanish)

Secretariat of Transport and Public Works

It allows citizens to make enquiries about the MOT inspection (VTV in Spanish), such as expiry date and status, according to the vehicle information entered. It provides information on the process of the procedure, how to request an appointment and details of the available verification stations.

● Referral to AGIP

(Governmental Administration of Public Revenue) Ministry of Finance and Treasury

Citizens are provided with a contact channel via chat in order to resolve concerns related to the AGIP, such as: Real Estate/Street Lighting, Sweeping and Cleaning (ABL), Auto Registration Number or Gross Income, among other tax issues.

● Traffic infractions

Ministry of Justice and Security

Users can identify and know the traffic infractions of a vehicle from the license plate or ID card number of the owner; pay these traffic tickets and generate a debt-free certificate. For each infraction, the following information is provided: a description with date, time and place of the infraction, the amount to be paid and the amount with discount (if applicable) and the photo evidencing the offence. The bot offers the possibility of referral to an infraction controller.

● Citizen request system

Secretariat of Citizen Care and Management of Municipal Urban Divisions

Citizens can request tree pruning, cleaning and collection, lighting, repairing streets and sidewalks, among others through WhatsApp.

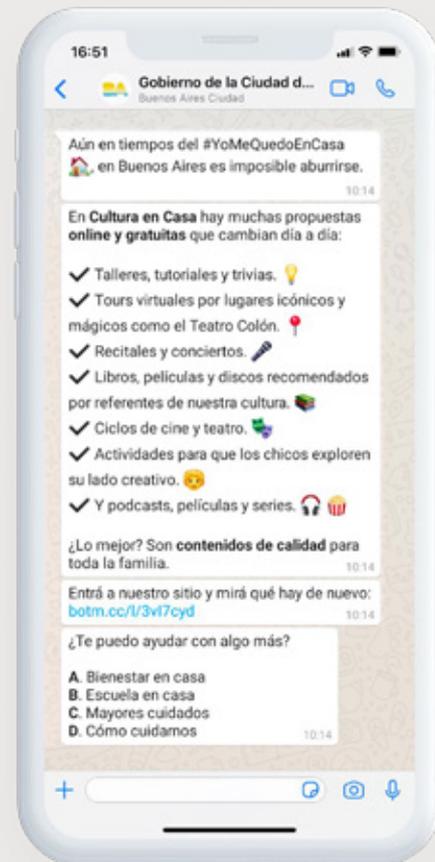
Wellbeing

● **Disfrutemos BA** (Let's enjoy BA) Secretariat of Strategic Affairs

The system communicates the offer of activities and events of Buenos Aires city, available in DisfrutemosBA (disfrutemosba.buenosaires.gob.ar). At the same time, users can narrow the search using filters such as: current location, popularity, category, date and price.

● **Physical experiences** Culture Ministry

QR codes serve as a link between the physical and digital worlds. People can scan QRs to chat with Boti and, for example, learn more about a place or cultural activity.



"From the City **we provide support and assistance** to families through WhatsApp, understanding that they may be going through a difficult situation due to the isolation. Once again, **technology allows us to be closer and closer to Buenos Aires' citizens.**"

Fernando Benegas

former of Innovation and Digital Transformation of Buenos Aires city

Context COVID-19



01

Medical Triage

02

Monitoring of close contacts

03

COVID-19 Vaccination

Capacity to adapt

The constant work of training and updating the bot was fundamental in preparing to face the scenario posed by the COVID-19 pandemic.

In the new health emergency context, the City's immediate priority was to develop and implement technological tools to support the health system in order to prevent the spread of COVID-19, and to allow the government to be closer to citizens to accompany them and simplify their lives during the social preventive and compulsory isolation decreed by the national government.

With the arrival of the coronavirus in the country, and taking into account the measures taken to prevent and avoid its spread, the work priorities were reorganised in terms of the incorporation of content, referrals and integration in Boti.

Previously, the focus was on providing services and generating digital solutions to the millions of residents of the city who needed to resolve their fines, make complaints, or renew their driving licences, or access the Education and Health systems, among others. Since the beginning of the

quarantine in the country, this focus has changed, placing Boti as the **official source of information** that allows the referral of suspected cases according to the protocol established by the Health Authority, as well as offering citizens a place to consult about symptoms and methods for disease prevention.

The advantage of having consolidated Boti's development so far is that it allowed the team to adapt it quickly to respond to the situation. Within this framework, Boti's work was similar to the work carried out in the edition office of a newspaper, where information has to be updated within 5 minutes. Although this situation was unpredictable, the tests carried out in the calibration sessions allowed us to understand how Boti's personality would react and to adjust its processes, understanding that in emergency situations, its **decisive attribute** would take precedence.

Buenos Aires was the first Latin American City to integrate WhatsApp to its COVID-19 protocol.



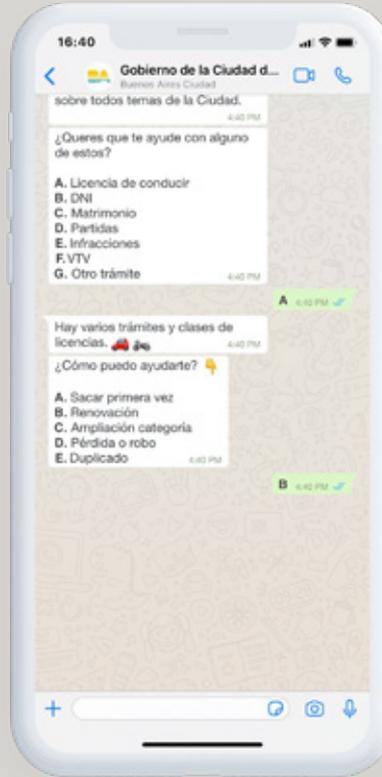
Due to the demand for official information and queries from citizens, traffic doubled during the quarantine, reaching more than 1.5 million conversations between the first months of confinement, i.e. from March to May 2020.

"Buenos Aires was the first city in the world to integrate WhatsApp to its COVID-19 protocol." Pre-Pandemic; During COVID-19 ¹

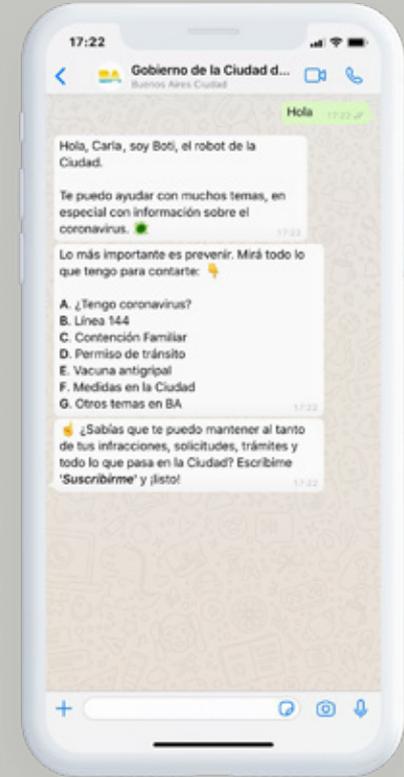
The first task of Boti's Content team was to make changes in the chat main menu with which the conversation starts. They included information about the disease, prevention measures, flu vaccination and blood donation campaigns, programs for the elderly, the location of health centres and everything related to cultural, educational and recreational activities to do at home during isolation. All this content was updated according to the new measures that were decreed.

At the same time, in order to avoid the circulation of people on public roads and in governmental offices, the Government made progress in the digitalization of all the procedures of the City that were previously conducted face-to-face, therefore, citizens can consult these procedures through the chatbot.

Before pandemic



During COVID-19



1. WhatsApp Inc., 2020.

01

**Medical
Triage**

New challenges, new functionalities

The need to support the Health system in this context forced a rapid integration of new services in our chatbot.

In order to increase the response capacity of the Health system, it was decided to incorporate in Boti a **new level of care** for those citizens who present symptoms that coincide with the coronavirus. In order to make the consultation, the citizen must initiate a conversation with Boti. Then select the option "Do I have coronavirus?" so that the bot starts asking a series of questions that were programmed together with the Ministry of Health of the City, as a "medical triage". This was the **first integration** linked to the COVID-19 protocol that was implemented in the bot and which enabled the telephone attention of the SAME 107 phone line to be less busy.

In a **second stage** of referral, based on the medical triage responses, Boti detects suspicious cases and connects them through the same conversation with a health operator for personalized attention. The operator will then evaluate how to proceed according to the protocol and, if necessary, coordinate the dispatch of a SAME ambulance to the citizen's home. In this way, specialists can assist up to five people simultaneously, whereas before, in the same amount of time, they could only assist one person over the telephone. In addition, this process has helped to reduce the number of consultations in hospital emergency rooms.

Integration of **complementary services**



107 call referral



Referral to a doctor through the same chat



Referral to the nearest UFU

2020

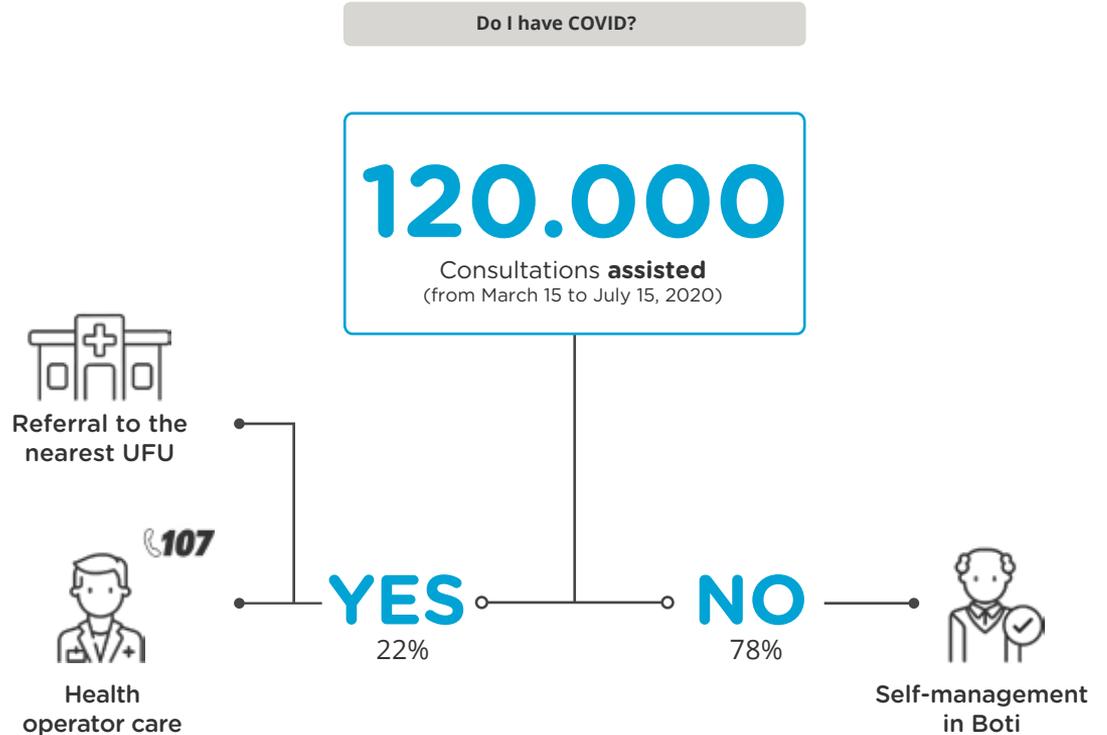
14 march

24 march

23 april

In a **third stage**, we worked on the referral to the nearest **Febrile Emergency Unit (UFU)**. If Boti identifies a suspected case, it refers the person to these units, which are located outside high complexity hospitals, so that potential COVID patients are not mixed with people who need other types of care in the emergency rooms. In order to be able to indicate the nearest UFU, Boti will ask the citizen for his or her current location and exact address, and then connect to the georeferenced map of the City and identify the nearest UFU.

During the first four months of triage operation, between mid-March and mid-July 2020, Boti received **75,102** consultations for symptoms associated with coronavirus and referred **16,397 (21.8%)** suspected cases. In this way, another **60,265 (77.2%)** queries were channelled through the chatbot, preventing such calls from connecting to the SAME system, saving resources of the Health system, avoiding unnecessary movement of personnel and improving the City's response to the spread of the virus.



"We are very satisfied with the work that has been done since the first weeks, the hardest ones. The reception of consultations through 107 and Boti works very well. Today we have **no calls on hold** thanks to the fact that we added the care of Health operators to the City chat."

Alfredo Crescenti
Director-General of SAME

Boti throughout the City



The dissemination of Boti, as the main channel of information regarding COVID-19, was leveraged on a strong communication campaign that included: graphics on public roads, messages on advertising billboards placed on avenues and highways; and guidelines in: television, national newspapers, digital media, Google and social networks.

The interesting aspect of the campaign was the combination of graphic and digital resources, including not only Boti's contact telephone number but also a QR code that citizens could scan with their mobile phones to be redirected to a WhatsApp conversation.

02

Monitoring of close contacts

At the service of health

Joint work was carried out with the Ministry of Health of Buenos Aires city in order to improve the response capacity to the increase of positive cases of patients with COVID-19.

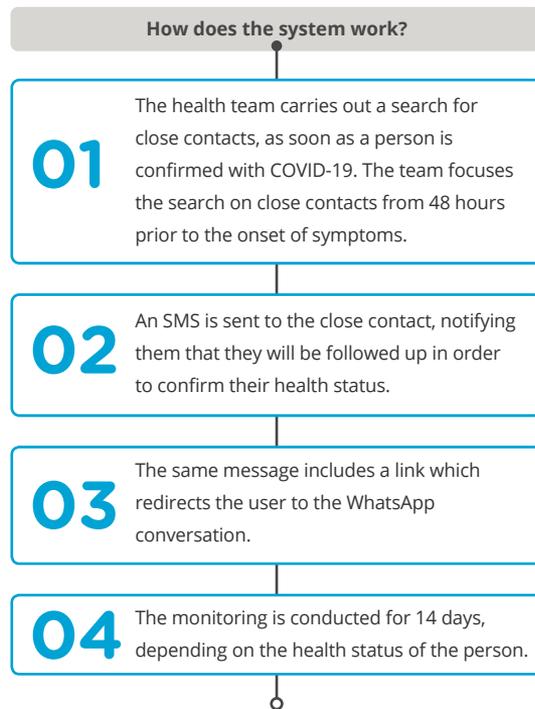
In order to monitor the health status of citizens who have been in contact with a positive case of COVID-19, the City has set up an exclusive and automated chat system that **doubles the capacity of telephone monitoring**, which will allow early identification of cases in order to provide appropriate care and isolate positive cases to mitigate the transmission of the virus.

When the person is identified as a **close contact**, the virtual assistant sends him/her notifications twice a day in order to monitor his/her health status: cough, sore throat, loss of smell or taste, fever or difficulty breathing. If the user reports symptoms, he/she will be referred to a SAME health operator or to the nearest UFU, where he/she will be swabbed. If the result is positive for COVID-19, the patient will be referred to a hospital (severe and moderate cases) or to a hotel (mild cases), depending on their care needs. In case of no symptoms, the bot will indicate preventive

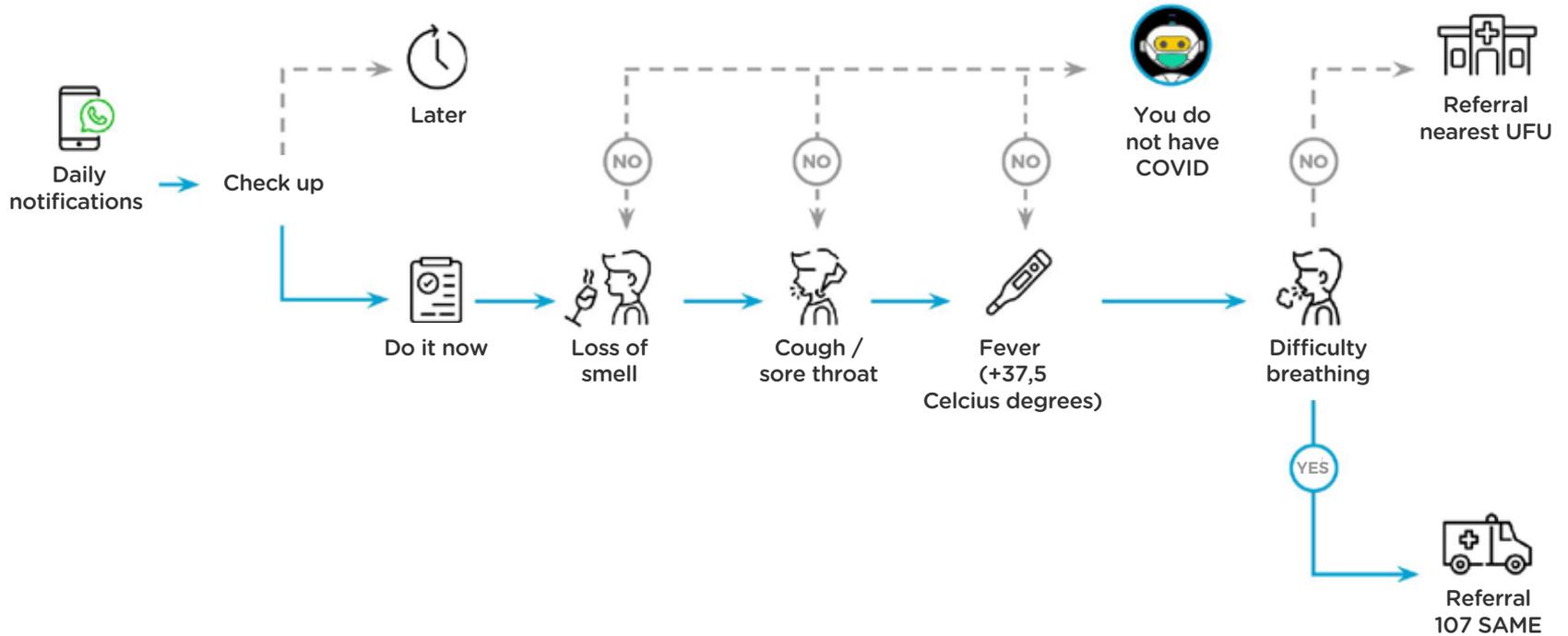
isolation for 14 days and will continue with daily monitoring to evaluate the patient's evolution and, if necessary, provide medical assistance. Once this period has elapsed, the follow-up is concluded and the citizen must continue to comply with the measures corresponding to the quarantine phase in force.

In all cases, the bot offers the citizen a **close contact certificate** issued by the Ministry of Health of the City, with their personal data and the date of isolation. The document can be downloaded to the cell phone and serves as proof of preventive isolation.

Unlike Boti, which is a generalist bot and is available to all Buenos Aires citizens, this new chat is exclusively for people who have been identified as "close contacts", and stops working once the person has complied with the mandatory isolation and has no symptoms.



Monitoring of **symptoms**



03

**COVID-19
Vaccination**

COVID-19 Vaccination

Boti incorporated information on the Vaccination Plan and an automatic notification system so that citizens can easily and quickly manage their appointment for the different vaccination centres in Buenos Aires city.

The City's COVID-19 Vaccination Plan has different stages defined on the basis of specific epidemiological criteria, such as exposure to the virus or the risk of serious disease caused by it. As part of this plan, a new tool was developed in Boti to guide citizens throughout the vaccination process.

The new system began to be implemented once the COVID-19 vaccination enrolment for adults over 70 years of age began and will be maintained for the rest of the stages.

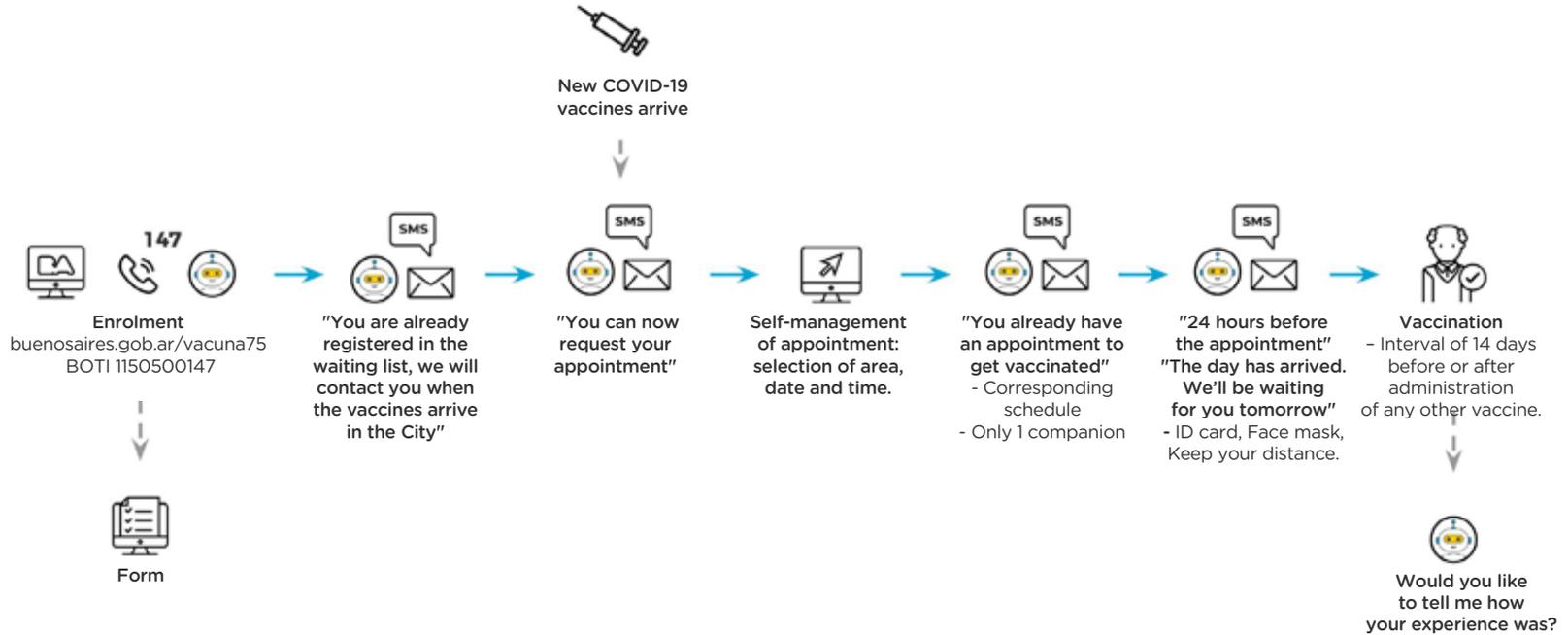
Enrolment and assignment of appointments

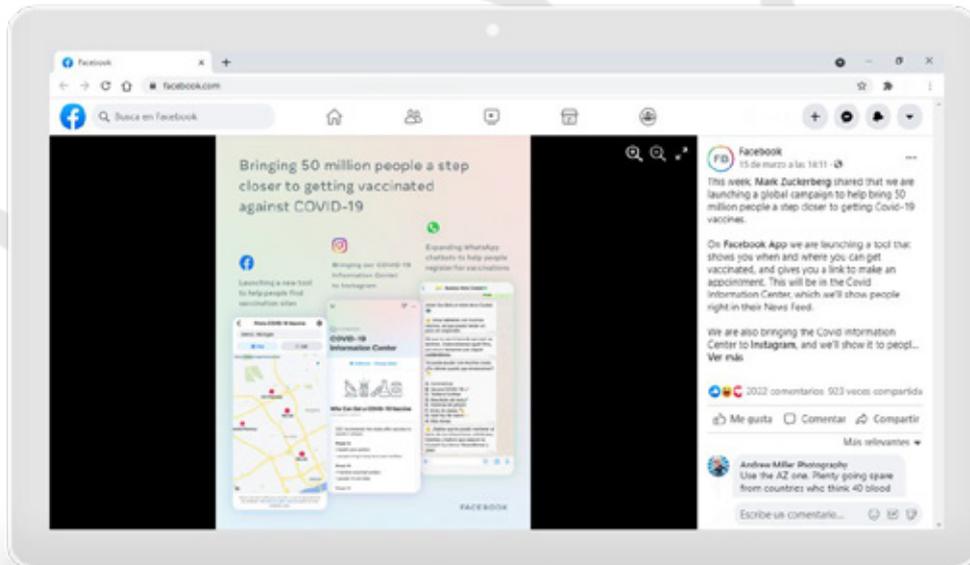
First of all, citizens initiate their registration in the vaccination programme through Boti. Once the conversation is initiated, the word "vaccination" or similar must be sent and the bot will share a link with the form to be completed by the citizen.

Once the registration is done, they will receive a communication confirming their registration both through Boti and by e-mail. Then, as the vaccines arrive, the citizens will receive through Boti, and through the rest of the communication channels, a registration notification to be able to self-manage their appointment in a specific website where they will be able to choose the area, date and time for their appointment. Once the appointment has been managed, Boti will automatically send them a message confirming the appointment and will send a reminder 24 hours before the appointment.



Vaccination Plan of the City





Global Recognition

In March 2021, Facebook recognized Boti as an international example of a solution in WhatsApp within the framework of the launch of its global campaign to help in the vaccination against COVID-19 worldwide. Since its creation in 2019, the bot is constantly trained and updated to provide a better service to Buenos Aires' citizens and this was fundamental in preparation to face the scenario posed by the COVID-19 pandemic.

Where we are headed



01

The beginning of the road

02

Looking into the future

01

**The beginning
of the road**

Virtual assistant and the road ahead

The use of Boti has been a propellant of better experiences for the citizens of Buenos Aires City.

Globally, the implementation of chatbots and their use as a channel of interaction between organisations and people has intensified through messaging applications that lead the market, such as WhatsApp, WeChat, Telegram or Facebook Messenger. All of them work on the same principles: text chat, voice and even video call. And, in addition, they have unique features focused on data security or privacy. The opening of the interfaces of these applications, with the aim of being used by both private companies and governments, has led to the exponential growth of conversational bots.

Since its creation, the chatbot of the City has been continuously advancing in its development with the incorporation of new content and integrations, and this constant updating was the way forward in the use of WhatsApp, which is allowing the bot an unparalleled growth. Understanding the implementation limitations and setbacks of messaging applications, the team continues to develop new services, always from the chat first concept in

terms of strategy and design process, to then transfer them to other available technologies.

Along this path, Boti's Artificial Intelligence has been improved with the incorporation of continuous improvement processes, which allow from correcting errors and recognizing words to identifying a negative message from a user. Although the mastery of natural language is still a challenge, the emergence of new forms of learning, such as voice, image and emotion recognition, gave a leap of quality to the processing of information and the evolution of the level of care and response to users.

The future of chatbots still has a lot to offer in terms of community service, but it is not the only path to explore. As Fernando Benegas, Secretary of Innovation and Digital Transformation of Buenos Aires city, points out: "We are prepared to adapt and migrate to other platforms if necessary. Although the trend of chatbots is not going to change because we are conversational beings and that is in our nature".

*Did you know that I received an award for **Best Corporate Chatbot 2019** highlighting my constant training and my closeness to the citizens?*



02

**Looking into
the future**

La nueva era de los chatbots

It seems that the future is already here and it is marked by voice.

One of the main challenges at Boti is to incorporate the full range of content offered by the City, as well as to add more and more services with the intention of allowing citizens to resolve requests and procedures from start to finish, within the same conversation with the bot.

Trends indicate that interaction with bots will be less and less through interfaces such as screens or keyboards, and more and more through voice commands. Globally, 74% of consumers already use voice assistants to search for or purchase products. Following this trend, Boti's team is working on the integration of a voice assistant so that citizens can communicate with the City by simply saying "Hello Boti, I want to carry out a procedure".

In order to continue building a modern State, technology and new developments are becoming allies, offering us new

fields of opportunity as we face increasingly challenging scenarios that require us to communicate with all publics and co-create with each one of them.

This path towards a digital government is part of the responsibility we have as public servants to offer all the citizens of Buenos Aires more efficient services tailored to their needs. It is the citizens, as users of the City, who have the answers we need to be able to know what we must improve and how urgently. This is the reason why strengthening the bond between the Government and the citizens is essential to understand which is the way forward.



"Supported by the conviction that it is the State that has to get closer to the people, and not the other way around, in Buenos Aires we made a great effort to be the first city in the world to develop a WhatsApp bot that meets the demands of citizens. Today, we continue incorporating new functionalities to enhance its scope and make more citizens choose it to contact the City."

Horacio Rodríguez Larreta

Head of the Buenos Aires City Government

Throughout the document, some foreign language terms have been used in order to preserve the accuracy of the concepts referred to.

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Secretariat of Innovation and Digital Transformation
Buenos Aires City Government

