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# From North to South: Map of 15 Genexus solutions in Latin America to face the pandemic

Whitepaper

GeneXus™

Latin America is engaged in a continuous battle of varying intensity in different countries.

One of the **support strategies** involves **software solutions**, developed in record time **with GeneXus,** to help society quickly find the best possible answers to meet its needs in a timely manner.

The following map shows various solutions that make up the action area of the GeneXus Community as a **response to the pandemic.**

There are **15 implementations made over the past 3 months in 13 countries:** Argentina, Bolivia, Brazil, Chile, Colombia, El Salvador, Honduras, Guatemala, Mexico, Panama, Paraguay, Peru, and Uruguay, with impact on the following sectors: Health, Finance, and Tourism.
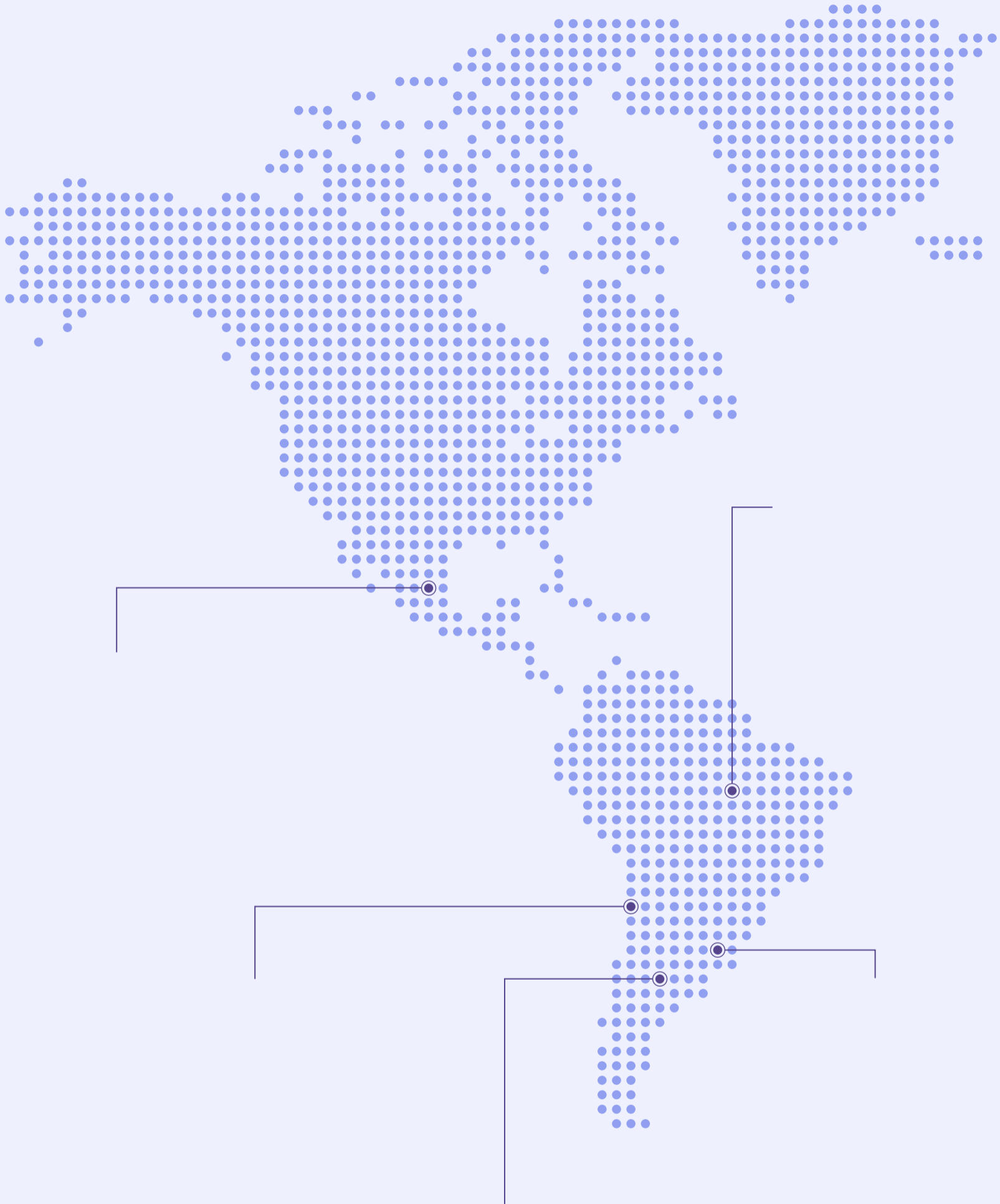
Latin America from North to South: 20 million rescheduled contracts

1. The banking and finance sector is a clear example of the digital acceleration caused by this pandemic.

The banking platform [Bantotal](#), distinguished for having its banking core developed with GeneXus, entered the market in 1991 and became a leader in Latin America. Headquartered in Uruguay, it has commercial and service offices in different countries of the region and Software Development Centers in Argentina and Peru. Needless to say, its customers are also distributed in many countries across the continent.

The situation created by the pandemic made it necessary to act quickly according to the **needs of clients in banks** throughout Latin America, so an unexpected workload generated in **12 countries** had to be processed.

Changes were made in response to the need to reschedule contracts for many clients from different banks across the continent: Argentina, Bolivia, Chile, Colombia, El Salvador, Honduras, Guatemala, Mexico, Panama, Paraguay, Peru, and Uruguay.

This rescheduling included different types of loans, such as consumer, pledge, mortgage, microcredit, leasing and corporate loans, among others; as a result, the total number of loans –number of contracts– that had to be rescheduled was close to **20 million.**

The adjustments were made in the Loan System itself, as well as Accounting, Credit Risk System and Regulatory Reports. In addition, each case had its own particular characteristics, depending on the guidelines of the regulatory bodies of each country.

"We were able to provide a fast response to clients thanks to the efforts of our team of dedicated professionals, who are highly knowledgeable about our banking system. Developing with a high-productivity platform such as GeneXus combined with our expertise has enabled us to work at an amazing speed and meet all needs in a timely manner", says CEO Marcelo Kosec.

Argentina: solutions for online appointments and telemedicine

In Argentina, two solutions were implemented: one with a positive impact on several sectors by innovating to provide online appointments, and another based on telemedicine that makes health care available to thousands of patients and users in different provinces.

2. Online appointments by Legado IT. Through its **Next Manager** solution, it addresses the mandatory requirement in Argentina to make an appointment before going in person to receive attention. With this solution, **appointments are made online on the web or from a mobile phone, in order to avoid crowding.**

Next Manager is a multi-company solution that can be integrated into other IT solutions, such as customer databases and chatbots, among others, to enhance the referral process and the effectiveness of services across different sectors of the organization. The integration of **GeneXus with IBM's AI** allows for implementation in multiple languages, which also helps to transcend borders.

The solution can be customized –in terms of either functionality or look & feel– and provides self-service through a **virtual totem** with a simple link. For facilities providing essential services, where it is necessary to apply and ensure social distancing, Next Manager also supports the configuration of **physical totems**.

Since its deployment, it is being used in offices, financial entities, pharmacies, vaccination centers, optical shops, travel agencies, prepaid health care centers and almost a hundred service points, throughout **11 provinces of Argentina.**

Image from http://www.nextmanager.com.ar/

3. Tekhne, in turn, has integrated **Teleme-dicine** into its hospital system to provide services to its clients through digital media. Some of the system's most important features are its flexibility and interoperability, which allows entering data into Single **Medical Records.**

Thus, the integration of the **telemedicine** module made it possible to reschedule the in-person visits that were cancelled due to the pandemic. In addition, it also facilitated outreach actions; i.e., to seek out at-risk patients to deliver preventive care and treatment, thus avoiding non-essential trips to health care providers.

This full web system was developed with GeneXus; also, it can be generated in languages such as Java or .NET, and run on the most popular database engines on the market. The solution is integrated with Jitsi –a **video conferencing,** VoIP, and instant messaging application for video consultations on the system. It features the following telemedicine application modules: Video Consultation, Appointment Scheduling, Online Payments linked to the financial institution for validation and use of the consultation service, as well as Billing module, Online Pharmacy, Health Records (electronic medical record).

Another outstanding solution from Tekhne is one developed for health financing institutions, which is an app for members that interacts with the backend. It allows patients to avoid unnecessary trips to request authorizations, access their medical and pharmacy records and credentials online, and rate the care received; in addition, a single care token is very useful to prevent fraud.

The integration was deployed in less than a month by two developers, reaching more than 550,000 beneficiaries.

Brazil: Pronto App in Blumenau to respond to queries about COVID-19

4. In just **two days,** the **Municipality of Blumenau** in Brazil **developed an application** that monitors the COVID-19 crisis.

This application is **Pronto Mobile**, an app of the Municipality's Health Department designed to facilitate people's access to health services, and monitor patients diagnosed with COVID-19 or who are suspected of having the disease. The tool is part of a strict process set up by a decree of the Mayor of Blumenau to monitor the pandemic.

The solution was developed by **i4 Intelligence for Innovation**, a regional distributor of GeneXus Brazil that creates solutions based on **Artificial Intelligence.**

Since it was released in mid-2020, thousands of people including both positives and negatives, have already been monitored by the application. The period of monitored social isolation is 14 days for positive cases and three days for suspicious cases.

"Monitoring the pandemic is considered a critical mission, which requires timely solutions to be effective in controlling the spread of the virus. For this reason, Low-Code tools are ideal for agile and timely development to meet today's needs", says Ricardo Recchi, Country Manager at GeneXus Brazil.

"GeneXus' Low-Code technology, which automates traditional programming languages, has allowed us to focus on the problem and not on the programming. In this way, we were able to deliver a tool to the population of Blumenau in a very short time."

Eric Boeing. Consultant and Head of Development at i4.

Chile: effective solutions for more than 120,000 micro-enterprises

5. One of the Chilean institutions that uses Bantotal is [Fondo Esperanza](#).

Fondo Esperanza promotes social development and has 16 years' experience supporting entrepreneurs from disadvantaged sectors through the provision of **microfinance services** (microcredit and microinsurance), training and strengthening of their support networks, in order to develop their businesses and improve their living conditions, as well as those of their families and communities.

In the context of the pandemic, it focused its efforts on supporting **more than 120,000 micro-entrepreneurs adversely impacted** by the side effects of the COVID-19 pandemic, so it decided to postpone its members' loan repayments for three months, at no cost to them.

"A significant part of the technical implementation has been possible thanks to the support we have received from Bantotal and GeneXus, with agile developments that allowed us to restructure more than 95% of the institution's portfolio in a timeframe that was very much in line with the needs of its beneficiaries."

Zunilda Vergara. Technology and Data Manager at Fondo Esperanza.

México: fast processing of tests and generation of reports about COVID-19

6. [Laboratorios del Chopo](), is a Mexican laboratory that for years has been using a mobile application to follow up on medical tests.

In the emergency context of the pandemic, they had to **adapt their point-of-sale system** so that COVID-19 tests could be scheduled beforehand to avoid crowding of patients in their facilities.

As part of this adaptation, an appointment book was created for patients to schedule a time and date for the test with a phone call. Once the results are issued by the diagnostic center, they are sent through the multiple electronic channels available to the laboratory (web, app and email).

To provide reliable and timely results, as well as to prevent human errors, **analytical interfaces** were created. These interfaces receive the results generated by the analytical equipment that processes SARS CoV-2 (COVID-19) tests through Excel, text or XML files, and are integrated with the patients' information to obtain the result. This allows them, on one hand, to **quickly process the data** and, in this way, generate reports on positive and negative cases, as well as keep track of those that are still pending. On the other hand, it **reduces by at least five times the time in which the results are issued**, thus benefiting both the patient and the treating physician.

Image from https://vonhaucke.mx/

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Due to the current context, and at the request of the Mexican Government, Laboratorio Médico del Chopo and the other laboratories licensed to perform COVID-19 tests must report all the results of the tests performed on a daily basis. Chopo had to upload an average of **1,000 results per day**, which meant a full day's work. To streamline this activity, a system was developed that makes it possible to upload the data from this number of records within **10 to 15 minutes using web services** for communication between both platforms (those of the lab and of the Mexican Government).

Another request from the health authorities in Mexico was to receive information about the patients' clinical data, treatment and epidemiological background, for which an application was developed where the patient answers an electronic survey for that information to be integrated with the result issued by the lab. All the adaptations to the system and new functionalities were made in an **iterative way with a team of 6 developers in 2 months.**

Chopo had to upload an average of 1,000 results per day, which meant a full day's work. From March to August 2020, Laboratorio Médico del Chopo **processed over 75,000 COVID-19 tests.**

Uruguay: health, finance, and tourism solutions

7. The telemedicine component DVelop had already been implemented two years ago to offer Summum's customers the option to make video calls with doctors. The module is integrated with the medical history, pharmacy and calendar modules to make an appointment (online or in person) with a specialist or laboratory. Functionalities were added that, at the time, were designed to enhance the UX of private medical insurance customers.

When in March 2020 a voluntary quarantine was adopted in Uruguay, all the health care providers cancelled non-urgent consultations and surgeries to allow most patients to remain in their homes in order to control the pandemic and prevent its spread. In this context, they all had to transform quickly to **operate online.** DVelop, which already had its **video call** solution, received an urgent request to integrate the component with other health care providers. That's how **WorkWithPlus for VideoCall** was created, completely focused on providing video conferencing capabilities, which can be integrated into different platforms developed with GeneXus.

This solution **was quickly implemented in SUAT emergency service and the Coronavirus UY app** to monitor positive cases of COVID-19, and has recently been integrated into some health centers in northern Brazil.

The speed of implementation –1 week in this case– is critical, because in the context of a pandemic it doesn't make sense to delay the development of a solution that affects millions of people.

"Being able to have a huge impact on the population in a few days and at a very low cost is the great advantage of this solution", comments Agustín Napoleone, CCO at DVelop Software Solutions. Within only 2 months, thousands of patients have received care via telemedicine in Uruguay.

8. Coronavirus UY APP is the Uruguayan Government's application, which is the result of a very fast development that integrated several technology companies of the country with platforms of the Ministry of Public Health (MSP) and all the health care providers, both private and public. The coronavirus reached Uruguay on March 13 and two weeks later, the **Coronavirus UY app, developed with GeneXus, had already been published on Google Play and Apple Store.**

Thanks to this fast response, which was accompanied by other strong public and social measures, Uruguay has managed to keep the feared exponential propagation curve flat, ranking among the top 10 countries in the world that address COVID-19 effectively and efficiently. The country has also been praised by the CEOs of **Google and Apple.**

At present, **Coronavirus UY** provides a safe method of self-assessment without overloading phone lines and avoiding movements of people, helping to improve care for those who suspect they have COVID-19. It also has features such as **drive-through testing and telemedicine** for those who test positive. All requests for information and case reports in Uruguay are handled through this platform, which has in 2020 reached almost one million people (27% of Uruguay's population).

The GeneXus Technology has allowed for the **development** of this state-of-the-art system with multiple levels of interaction in **record time –only two weeks–** and has helped to implement it in an agile, flexible and scalable way to solve a global, mission-critical problem.

This Uruguayan technology has also allowed for the fast integration of a system developed by the global companies **Apple and Google**; it is called **contact tracing** and uses cell phones' **Bluetooth** feature to receive alerts of proximity or exposure to a person who has been diagnosed with COVID-19. In turn, whoever has the virus will be able to collaborate – subject to their consent– by sharing that signal from their mobile phone (which does not send personal or geographic location data).

More than **1,300,000 users** have already downloaded the application.
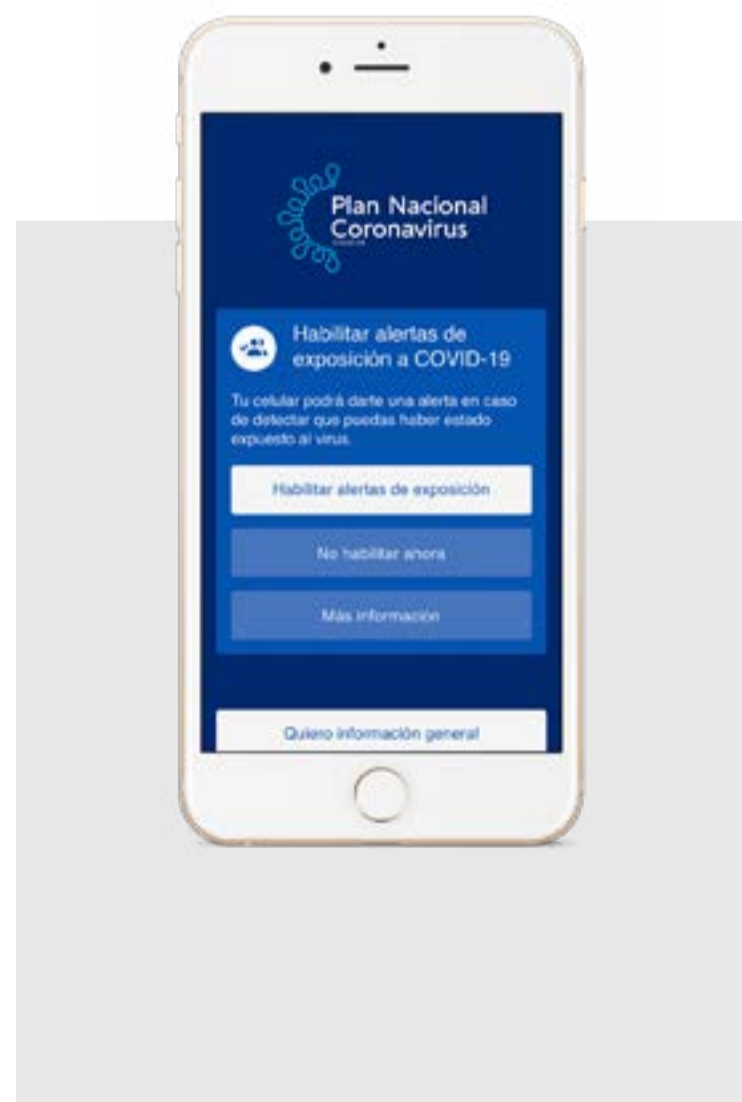
9. The **drive-thru** COVID-19 test, implemented by the [Biotechnology company ATGen](#) with an online appointment feature developed by GeneXus Consulting, is another positive aspect of using physical distancing to stop the spread of the virus.

The **drive-thru** method allows patients to be tested without getting out of their car, thus avoiding contact between staff and users.

ATGen was the first private lab in Uruguay to offer this test for detecting SARS-CoV-2; to date, it has conducted tens of **thousands of tests** in close collaboration with the health authorities, and **many of them were carried out in this way.**

ATGen's system is constituted by a platform including a **digital calendar** developed by **GeneXus Consulting**, with the primary objective of avoiding crowding and previously identifying the users who come to take the test. The test can be scheduled in several ways: through the web, through health care providers, or it can be referred via the Coronavirus UY application that centralizes diagnostic data.

This software solution was **developed and implemented jointly by ATGen and GeneXus Consulting in 10 days**. The **K2BHealth** technology platform integrated with the Payment Gateway functionality (e-commerce service provider that authorizes payments to electronic businesses) was used for this purpose. It is also integrated with the **Coronavirus UY APP** in order to centralize data from the entire country simultaneously.

Imagen obtenida de Diario Clarín

Software solutions for special needs

In turn, GeneXus Consulting offered a range of solutions designed for those at higher risk from coronavirus: people over 60, retirees and residents of nursing homes, who comprise about 20 % of Uruguay's population.

In this scenario, different technology systems were adapted to respond to this new reality.

10. The first step was to address the financial needs of retirees. To this end, a solution was implemented at **Banco de Previsión Social (BPS)** in record time that implemented online loans for retirees, pensioners and employees of the social security bank, without the need for them to visit the institution in person. This solution was added to others provided by the BPS, such as new subsidy payments and decentralization of payments at BPS offices to avoid crowding.

The new online loans for retirees, pensioners and BPS employees made it possible to **make an application remotely that previously could only be made in person.**

This web solution was developed and implemented over the bank's existing technology base using **GeneXus technology and K2BTools** within 10 days with 400 hours of work by a team of 5 people, thus collaborating with the task of protecting the bank's users and employees.

"Faster digitalization of some basic and essential administrative tasks has a positive impact on the agility and integration of different sectors into digital transformation. Also, it improves time efficiency and the use of natural resources."

Alejandra Lemos. Project Director at GeneXus Consulting.

The Web loans project was going to be developed during 2020, but given the situation, **what was planned to be accomplished in 4 or 5 months was done in only 10 days.**

In addition, this solution includes a **web application to appoint someone other than the beneficiary to collect a retirement pension.** This formality, which previously could only be carried out in person, had a potential target group of 118,000 people during the health emergency.

In the context of the pandemic, this was exceptionally solved in **two days with an Identity Verification and Request Validation Form** to authorize another person (not a legal representative of the beneficiary) to collect payments issued by BPS during the COVID-19 crisis. The existing regulation was modified due to the need to allow another person to collect social security payments on behalf of a senior person.

In addition to automating communications and integrating with systems handling powers of attorney, a web functionality was designed that uses key questions to help the employee who makes a verification call to confirm that the person who made the request is who he/she claims to be.

In a period of 3 months, **7,500 requests** have been answered.

11. Another sector assisted with solutions for the digitalization of administrative tasks was ANCAP's plant personnel within the framework of the **Electronic Ticket** project, in which a series of operational changes were implemented to improve the operation of the plants through the incorporation of technology.

In this case, the key change consists of eliminating the printed loading order document and instead creating a **virtual list** where distribution companies report the various trips to ANCAP.

As a result of this change in the daily work process, which has been digitalized, the different parts of the process –ANCAP leaders, distribution companies, logistics managers and drivers– can continue to operate safely, since it contributes to reducing the **risk of COVID-19 infection** for all involved personnel, in addition to **optimizing service times, generating online information** and reducing the handling of paper documents.

12. Microcredits for entrepreneurs was another solution addressed by GeneXus Consulting in 12 branches of Cintepa, in Uruguay. They were made available to small enterprises of the credit union, adding credit application options in the mobile application, according to the credit lines of the National Development Agency (ANDE) offered due to COVID-19.

These "Emergency Microcredits" were intended for entrepreneurs and micro-entrepreneurs who were looking for **financial support.**

The development of this new line of credit is consistent with the credit union's purpose of helping and assisting each other by providing long-term financial services for its **12,000 members.**

The solution was implemented in **6 days** with the latest GeneXus technology for the **Smart Device generator** and was able to quickly meet the pressing needs of the country's entrepreneurs.

13. The Public Health Services Department **(ASSE), together with the Ministry of Public Health, requested GeneXus Consulting** to develop and deploy **an application** to accelerate the registration of volunteers with different profiles, indicating their availability and location.

This **Volunteers** application works in a very simple way: The demand is entered, and its fulfillment is managed with the supply of volunteers. The volunteers registered during the time of high demand responded to **17,500** queries and were able to ease the heavy burden of ASSE at the peak of cases. In this way, the volunteers who offered their time to help in Uruguay were organized in an optimal way.

14. Another **health care** aspect to be addressed was how to **continue to provide care** online and perform certain tests that could not be suspended, but which posed a risk when they were carried out in person, given the patients' vulnerability to COVID-19.

A special case is that of people with **coronary risk** who require frequent elec-

trocardiograms and monitoring of cardiovascular function. **Galeno_Sys is a medical device based on the Internet of Things (IoT),** which records up to 6 ECG (Electrocardiogram) leads by means of disposable electrodes on the patient's chest, providing constant monitoring from any location.

The records are sent wirelessly to a **cloud server,** where the application **analyzes them in real time** and generates alerts in case of arrhythmias or **heart rhythm abnormalities.**

"GXC has been working with Galeno_System for a year; during this time, we implemented the software with all the necessary architecture and security requirements. Basically, the application has a backend for managing the devices and general configurations, which we developed by applying **K2BTool patterns**." says Marcela Corbo, Product Manager of **K2BHealth.**

15. Tourism has been one of the most affected sectors worldwide, due to the closure of borders. Faced with this problem, Netviax has proposed to reactivate local tourism through **Uruguay 365**, a National Tourism project based on the platform of Mercado Viajes and Netviax ATLAS, a software for tourism management.

According to the **World Tourism Organization (WTO)**, the current scenarios anticipate a drop between 60% and 80% of international tourism for the remainder of 2020, which translates into losses of up to 1.1 billion tourists, more than $900 billion, and between 100 and 120 million

jobs at risk. It is enough to look at the impact caused on airlines, which are essential drivers of [turismo internacional](#).

Netviax Solutions is a technology company for **Travel Agencies** –and a Microsoft and GeneXus Partner–, which has a **web platform** that serves as a distribution channel for information and tourism products for travel agents. It is an easily accessible tool, which matches supply and demand among companies in the tourism market, consolidating all the available, up-to-date and active information in it from different wholesale operators, airlines or other service providers for the travel agency network.

As tourism has come to a standstill [Netviax](#) team has created the platform [Uruguay 365](#), with the purpose of connecting tourists who are looking to enjoy travel experiences with entrepreneurs who offer them.

Due to the pandemic, in just a few weeks and with a very small group of professionals, they decided to **redesign the product module of their Business, Administration and Financial Management system Netviax ATLAS**, which allows creating and managing the catalog of more than 700 international tourist packages by 8 different travel agencies, to adapt it to the specific characteristics of **national tourist packages.**

The project is supported by Uruguay's Ministry of Tourism (MINTUR), the National Agency for Research and Innovation (ANII), and travel agencies Jetmar, Hiperviajes, Buemes, Toctoc, Tienda Viajes, and Voy de Viaje. In addition, it has made agreements with major banks and financial institutions that offer discounts of up to 20% and financing in up to 12 installments without extra charge.

Currently, the offering consists of more than 1,200 options, including hotel stays, accommodation in country houses and estancias, sports and outdoor experiences, car and caravan rentals, guided tours, tastings and lunches in wineries offered by more than 200 suppliers. It is now being used by more than 60 users including salespeople and call center agents from 6 travel agencies.

Netviax ATLAS is a product entirely developed with GeneXus, hosted in the Microsoft Azure cloud. It has a web app with a very engaging user experience, and a Portals API that enables the **Uruguay 365** website to obtain the consolidated travel offerings of all the participating agencies,

and the details of each of the products including their descriptions, pricing structure, and multimedia content.

The Products API, in turn, allows agencies such as Jetmar, Tienda Viajes, and Hiperviajes to publish only their products on their websites developed by different integrators. In this way, using a single system, agencies are able to manage their products and select which channels the product should be published in, simplifying the complexity of tourism products

and contributing to the agility required by the business.

In addition, a team of writers was brought in to create content for this project, and more than 150 salespeople were trained.

In the meantime, Netviax continues to work on innovative options, helping to revitalize the **local tourism economy and employment**, connecting customers who are eager to travel, relax and escape from the stress created during this pandemic.

If you want to know more success stories around the world, **visit our website.**

GeneXus™