

AWARDS CASE STUDY: BEST WI-FI FOR SOCIAL IMPACT

ZII PARA TODOS – FREE PUBLIC WI-FI IN COSTA RICA

INTRODUCTION

Across a tiny paradise called Costa Rica, we are proud to be part of the “Espacios Públicos Conectados” project, which the main objective is to deploy a countrywide access network through WiFi technology all over Costa Rica providing public access to the Internet in public places such as Main Squares and others managed by the Municipalities, train stations, public libraries, sports venues, national parks and community centers where the general public enjoy the service for free., as you could see on the following pictures.

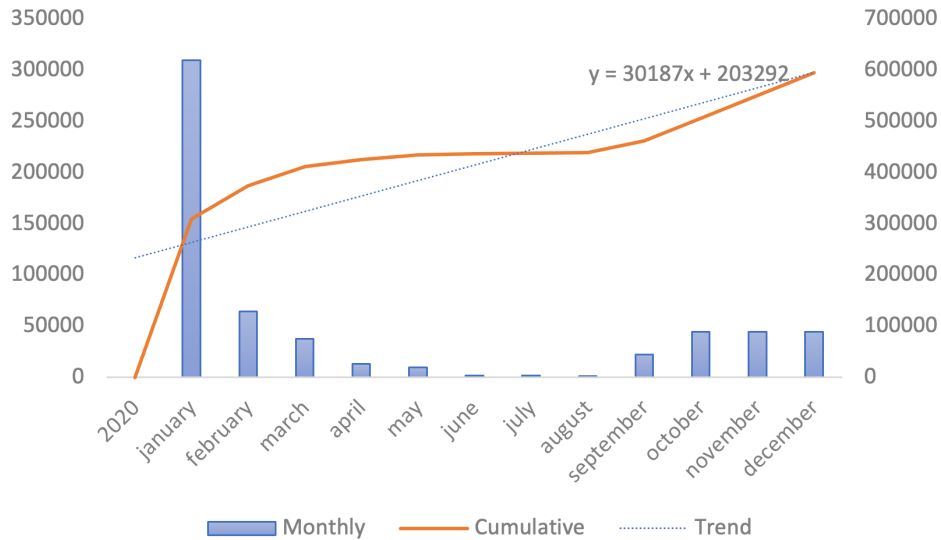
As any good endeavor worth accomplish and to evenly cover most of the counties in Costa Rica and ensure free WiFi access to less fortunate citizens, we had defined aid periods where this program will assume the costs of the services in periods of 3, 5, or 7 years depending on statistical analysis on social development for each of the 82 counties where the country is politically divided, providing free WiFi access to the end-users.

DESCRIPTION OF THE CASE

During the challenging times, we all are facing, internet access has become a human right that allows us to communicate with our loved ones, to keep working without affecting productivity, and allowing students of all ages to continue with their personal and educational development. From that standpoint, in terms of project performance, since the public launch of our program, we had provided free WiFi access to more than 746.000 people through 513 public hotspots across Costa Rica, as shown in the following picture.

Despite the COVID-19 pandemic, based on the current performance we achieved 35% users increase during the last 4 months of 2020 (as shown on the following chart), and we are confident to expect to reach more than 900K users by the EOY 2021.

35% users increase by EOY 2020



Sources: “Zii para todos” PMO

This project had impacted so many people and improve the quality of living of so many that we reached by the end of October 2020 more than 10% of overall population to be served by our program, where we will be connecting half a million unconnected people without jeopardizing the health of the users by implementing and following health recommendations from national authorities.

This challenging undertaking has been possible by the commitment and support from several local Telecommunications companies who had been supported by the universal services fund FONATEL (*Fondo Nacional de Telecomunicaciones in Spanish*) to increase their footprint at zones with low commercial value and complete the deployment of our hotspots nationwide, simultaneously on three different fronts and focusing especially on low income and vulnerable areas where the need for Internet access is crucial and becomes a real development enabler. In the following chart, you would find how the funds will be distributed yearly to provide free WiFi service to all the public places covered by our program.

In terms of transparency and compliance during the execution of the budget, the telecommunications universal service fund (FONATEL) develops its programs and projects through a trust that is managed by the *Banco Nacional de Costa Rica* (BNCR), a public entity entitled to ensure the proper use of these public funds.

To identify the best public places where the most vulnerable population gather and positively impact the bigger amount of people, cross-functional criteria were defined to enhance the Internet access and help them improve their toolbox of skills required for looking for better opportunities and support their professional and personal growth.

This endeavor has a social impact that would not be possible if our project were not supported and be part of an integrated development plan design by the MICCIT (*Ministerio de Ciencia, Tecnología y Telecomunicaciones* in Spanish) as the national public leader responsible for Information and Communications Technologies and the universal fund FONATEL defined on a framework: “*Plan Nacional para el Desarrollo de las Telecomunicaciones*”, without such structured and orchestrated public policy the effectiveness of our project will not be attainable.

SOLUTIONS

This program had been reaching so many aspects on the digital divide reduction in Costa Rica and we certainly can be a reference or a light during one of the darkest nights in mankind had been facing in our history based on the following solutions provided:

1. This is a country development plan, that would have a countrywide impact independent from the government’s administrations, reaching 100% of counties.
2. This is an integrated development and modernization project that had built strong ties among all the stakeholders, which is not common in Latin-American countries. We expected to serve the most needed demographic group: the low-income population, which represents about 20% of the overall population where most of these families are depending on a single parent as sole income.
3. This project aims to reduce the digital divide not only in terms of access to technology but through its usability, driven by an alphabetization strategy that will help the most vulnerable groups like such as students, elderlies, single mothers, and indigenous communities; thanks to our project we aim to reduce the digital divide by 18%.
4. A mix of best practices and creativity were considered during the conceptualization, planning, and execution of the project to reduce the “time to the community” and efficient public resources management.
5. Our project had been deployed 30% faster than planned, which is helping more people earlier.
6. Through our project we are providing Internet access to 62 public libraries, supporting the learning process to 943,000 students who will be attracted to pursue STEM career paths.
7. Currently, we had more than 169K students registered which means that we had to be able to support their education plans even though the pandemic.
8. 50,000 people could be served daily across the Train System at the Great Metropolitan Area.

9. This project is the germ for a bigger and integral modernization plan that considers fiber optics deployment, smart cities development, digital transformation in the public sector and communities, and setting the cornerstone for 5G for the whole subregion.

IMPACTS TO PEOPLE AND INDUSTRY

From the technological standpoint, by the time we designed our project during the boreal summer of 2017, we considering the following aspects:

1. To ensure the coverage of the biggest number of users and bearing in mind that our target demographic was the most vulnerable sectors, we adopt the WiFi5 standard (IEEE 802.11ac) as the technology to be deployed nationwide through all the public places to be served by our project.
2. WiFi5 AP's allows us to ensure an excellent user experience for up to 100 simultaneous sessions with 1:6 oversubscriptions and being able to optimize the use of our technical infrastructure and financial resources.
3. Though WiFi5, which is commonly used by a large type of device we aim to cover the needs of most vulnerable users, and in that sense, we had designed a future proof WiFi network suitable for developing countries like Costa Rica.
4. By using Wave2 MiMo technology we can optimize the amount of AP's required to cover our public locations and improving the footprint of our project through more than 500 places with an optimized amount of AP's.
5. Since the selected AP's works on 2,4 and 5 GHz bands, we had been able to optimize the use of the frequencies by assigning more demanding applications such as streaming to 5 GHz and email or web browsing on 2,4 GHz, ensuring a superb user experience.
6. We reinforced a multivendor ecosystem that allows the project to avoid dependencies or limitations that could jeopardize the evolution of "Zii para todos" and promotes competitiveness.
7. Taking advantage of Wave 2, we enabled "extended zones" where nearby locations can be integrated, and our users can take advantage of our free service without the need to register every time they move from one zone to another.
8. Our project is scalable in terms of bandwidth capacity, up to 300 Mbps at the backbone and up to 15 Mbps at the access interface, making our project future-proof to new contents, applications, and digital trends.
9. WiFi6 capable, by just upgrading the existing AP's with the new IEEE 811.ax versions during a "modernization phase" considered as part of the project we will be able to improve the network's performance and user's experience to world-class service not available yet on similar projects in the region.

Technically we aimed to provide a future proof solution that will improve the quality of living of so many former unconnected people through and effective execution by the Universal Service Fund,

which can be summarized in the following benefits and positive impact that our project “Espacios Públicos Conectados” is bringing to our community:

1. Recovery and renovation on public places all over Costa Rica.

Renovated public places in San José, Costa Rica



Sources: “Zii para todos” PMO

2. Encouraging digital alphabetization on educational and productive activities, especially on most vulnerable communities through an educative platform specially developed for the project.
3. To effectively reduce the access to internet deficit (AID) and digital divide, as part of the program we had developed an online learning platform – MOOC (Massive Open Online Course) at <https://ziimecapacita.com/login/index.php> with a variety of topics including ICT, leadership, and business; this platform will be the vehicle that we will use to improve the quality of living of those in needs that haven't had opportunities through traditional education

Online learning platform

https://ziimecapacita.com/course/index.php?categoryid=4

Zii WIFI Mis cursos ▶

Página Principal Cursos Cursos disponibles

CURSOS GRATUITOS

Bienvenidos al listado de cursos gratuitos de Ziimecapacita.

- Le invitamos a leer cuidadosamente el [instructivo de uso de la herramienta](#).
- Para obtener el Certificado de aprovechamiento, debe tener una nota final mínima de 80 puntos.
- Esta herramienta es GRATUITA, no se le pedirán datos personales ni financieros por este medio, ni telefónicamente.

A continuación se muestra el listado de cursos:

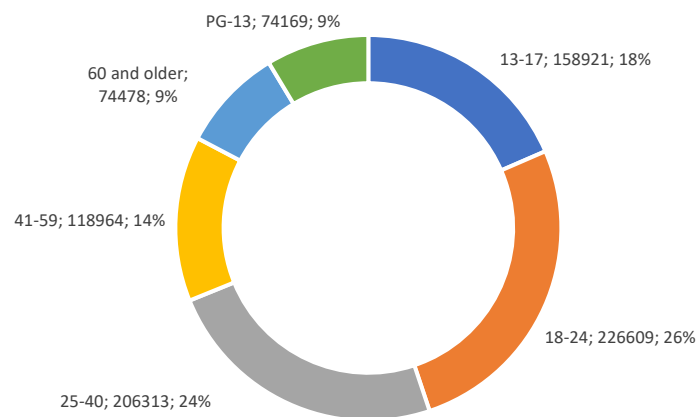
Página: 1 2 (Siguiente)

- Análisis de Información **
- Análisis y Manejo de Objeciones

Sources: "Zii para todos" PMO

4. Developing an effective ecosystem for the creation and promotion of the public digital transformation regarding Smart and Sustainable Cities, Internet of Things, and e-government.
5. Boosting new opportunities for the most vulnerable groups such as students, elderlies, single mothers, and indigenous communities will be able to access better and more rewarding opportunities through their participation on the Internet society. Bellow, you will find charts where you could see how the user's profiles are distributed, and clearly, the youngsters are the group taking more benefit from the program, representing around 70% of our beneficiaries.

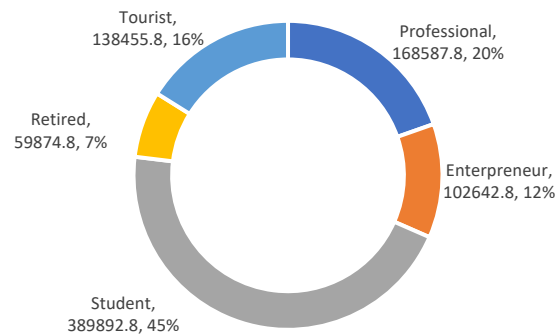
Online learning platform



Sources: "Zii para todos" PMO

6. Promoting Public-Private Alliances to fund and develop the project, creating direct and indirect job opportunities, and becoming a reference for similar projects in Latin America.
7. Our project is reaching out to communities where such projects would not be able since those are not economically viable but that effective public policies and public-private alliances are possible and sustainable. The main beneficiaries are the students and the small and medium businesses (SMB's) entrepreneurs, representing 69% of the users, as you could see below

Users demographics by occupation



Sources: "Zii para todos" PMO

8. This project is creating a ripple effect on the communities served, through the development of new businesses based on the Internet and extra services related to the new technological infrastructure in place.
9. Reducing the digital divide at the populations served by the program by 18% nationwide by improving the access to the Internet and its usability in most vulnerable counties in Costa Rica.
10. By the installation of more than 75000 KMs of Fiber optics across Costa Rica, especially in less developed provinces, allowing the possibility to enjoy broadband and ultra-broadband services by their citizens and increasing around 105% of backbone's installed capacity.

Through monetization approaches, the project will be sustainable beyond the financial support from FONATEL, allowing the end-users to keep enjoying the service for free while they continue to develop new skills and pave the road to a better future.

CONCLUSION

We had been able to reach out to a vast majority and the achieved results demonstrate how positive and successful our project had been so far, but there is still room for improvement and to increase our footprint beyond the current target. Our project was originally aiming to deploy 240 WiFi hotspots countrywide but our current scope is 515 spots, however, our program will grow up to 697 sites by mid-2022 and could grow even more and reach up to 100% of the original scope by contractual definition, and therefore the project is scalable and had been evolving to serve new public places based on an optimized technical approach and especially by gaining support from several stakeholders that had to be eager to participate on this endeavor based on current results and impact over the local communities and as an enabler for Costa Rica's technological evolution.

To ensure that our program is scalable and sustainable by design and that we will be able to reach out the most needed in Costa Rica, we had built an ecosystem based on the following 5 pillars:



Sources: "Zii para todos" PMO

1. **Stakeholders' integration:** cooperation with the supporting institutions such as Municipalities and Public Libraries that allow us to include new Free WiFi Zones on locations where will be needed, based on their expertise and understanding of public behaviors and needs.

2. **Infrastructure modernization:** revitalizing the transport network (backbone) enabling carriers to provide services on communities that were not covered before since the main investment had been made already.
3. **Capillarity:** taking advantage of spare Installed capacity at Free WiFi Zones, allowing us to increase our simultaneous user's capacity by 20% if needed without jeopardizing QoS and performance defined for the project.
4. **Scalability:** transport capacity scalable up to 300 Mbps per AP according to our Scope Plan but could be increased up to 1 Gpbs per AP if communities demand it or when the arrival of new applications required bigger bandwidth.
5. **Digital Transformation:** build a framework for Digital Transformation, based on the installed infrastructure we will be able to cover the needs for WiFi services from different institutions like Public Hospitals, First Response Clinics, and Public Schools to integrated and connect public places through a seamless reliable network. The infrastructure provided for our program will have enough capacity to integrated and serve more users and provide new services that will enable the deployment of a broader technical architecture that will support IoT and 5G networks across Costa Rica, representing the cornerstone for the Digital Transformation on this tiny little piece of Paradise on Earth.

On behalf of the people of Costa Rica, we developed this program bearing in mind that the best way to improve the quality of living of our people and help them to grow the skills and knowledge necessary to transform their lives and make sustainably and permanently is through education and technology, and in that sense, this project is aimed to accomplish through reducing the digital divide not only from the access' standpoint but from the application and appropriation as well.

As we say in our beautiful country: ***Pura Vida Costa Rica!***