GSMA™

SOLIS Bot: Project lessons and outcomes

Grantee:

Solidarités International is a non-governmental organisation (NGO) that assists populations affected by conflicts and violence, epidemics, natural or climate-related disasters and economic collapse. Their humanitarian teams are committed to helping people whose lives, health and security are threatened, by meeting their most vital needs for food, water, shelter and hygiene (WASH).

Project:

Solidarités received a grant from the GSMA Mobile for Humanitarian Innovation Fund to test and scale their SOLIS Bot, an innovative WhatsApp chatbot that provides two-way communication with the refugee communities

they work with in Lebanon. They also received an additional COVID-19 adaptation grant to adapt SOLIS Bot to the needs of the pandemic.
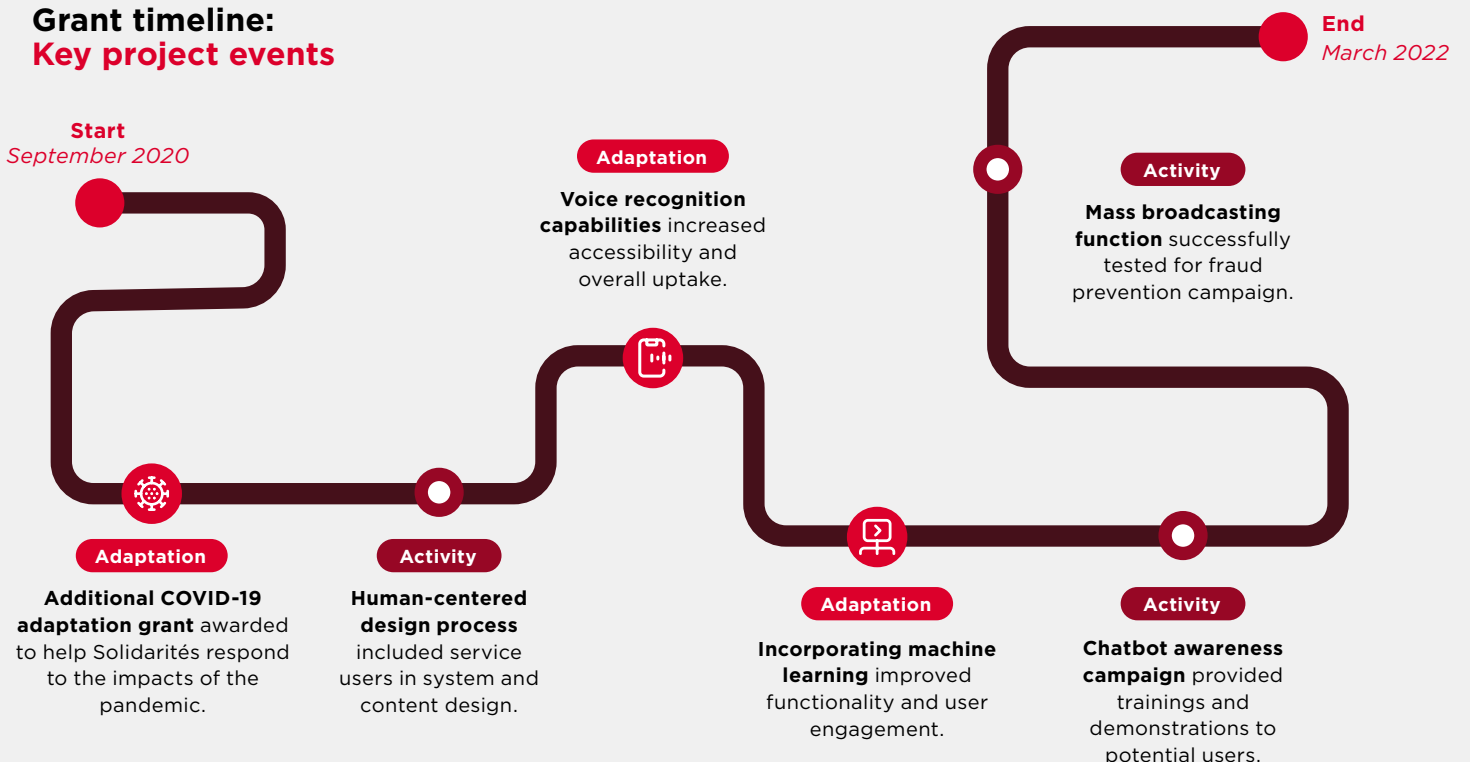
Grant details:

— September 2020 to March 2022

— Mobile for Humanitarian Innovation Fund grant of £86,642

— COVID-19 adaptation grant of £50,000

Partners:

Twilio was the lead technical partner for the project, developing the core cloud communications platform as a service (CPaaS) and training the project team members to use the chatbot.

Grant timeline:
Key project events

Start
September 2020

Adaptation

Voice recognition capabilities increased accessibility and overall uptake.

End
March 2022

Activity

Mass broadcasting function successfully tested for fraud prevention campaign.

Adaptation

Additional COVID-19 adaptation grant awarded to help Solidarités respond to the impacts of the pandemic.

Activity

Human-centered design process included service users in system and content design.

Adaptation

Incorporating machine learning improved functionality and user engagement.

Activity

Chatbot awareness campaign provided trainings and demonstrations to potential users.

Project background

Solidarités has been providing assistance to around 100,000 displaced Syrians at more than 3,000 sites in Lebanon. In the past, they have provided a telephone hotline for refugees to request assistance and give feedback on service delivery. The hotline was often busy and user feedback suggested that they felt their requests, opinions and complaints were not being listened to or acted on. After assessing the communication channels that Syrian refugees in Lebanon use most, Solidarités decided to develop SOLIS Bot, a WhatsApp messaging chatbot. By establishing a direct, stable and practical communication channel, they hoped to better understand the needs of these communities and introduce a more systematic accountability process.

Project timeline details

COVID-19 adaptation grant

The GSMA awarded Solidarités an additional £50,000 to adapt the SOLIS Bot as an effective, COVID-safe communication channel. The COVID-19 pandemic exacerbated humanitarian needs and limited livelihood opportunities, increasing the number of refugees in need of assistance. National lockdowns highlighted the importance of reliable two-way communication with service users, but strict movement restrictions and social distancing protocols interrupted the planned project activities. Solidarités used the additional funding to incorporate voice recognition and machine learning to improve the efficiency of conversations, provide more accurate answers and expand messaging to include COVID-19 content.

Voice recognition

To increase accessibility and overall uptake of the chatbot, Solidarités built voice recognition capabilities into SOLIS Bot, a pivot from the original plan. One of the primary objectives of the project was to make humanitarian services more accessible for isolated and vulnerable communities. However, literacy was a barrier, with 19% of initial chatbot users reportedly finding the tool a less convenient way to request assistance because they did not have the reading or writing skills to use it. When Solidarités staff realised that most of their service users actually use WhatsApp for its voice messaging function rather than for written messages, they incorporated a voice-to-text-to-voice module in SOLIS Bot. This has enabled the bot to use voice notes to receive instructions and communicate with users in the same way it does with text.

Machine learning

Incorporating machine learning was also an important pivot that helped improve the chatbot's functionality and overall user engagement. Solidarités staff recognised that, for some groups, a key barrier to accessing and informing humanitarian services was the language used to communicate with them. Incorporating natural language understanding (NLU) into the chatbot enabled it to respond to queries in more appropriate language, using dialect and terminology more familiar to users. This was particularly useful for sharing ongoing COVID-19 information, such as where users could find the nearest vaccination centre.

> "When we hadn't received potable water on the agreed timing I asked the SOLIS bot for the water trucking service. The next day I got a call from the Solidarités team informing me that they had contacted the water trucking company and they would be delivering water the very next day."
>
> **– Male service user in Bebnine**

> "I feel lucky to have this technology available, it is empowering that I am now able to get the information and support I need without having to go and ask the Shawish (an informal settlement supervisor) to request it for me."
>
> **– Female service user in Taanayel**

Mass broadcasting test

An opportunity to test the chatbot's mass broadcast function arose when Solidarités became aware of fraudsters posing as employees of an NGO in the region. One of the initial aims of the SOLIS Bot was to improve mass communication between Solidarités and the refugee communities they were working with. Unlike Solidarités' existing SMS tool, the WhatsApp broadcast message function is not limited to messaging 25 numbers at a time and can also be used to share information via audio as well as text. Solidarités used the broadcast module for a fraud prevention campaign, sending a message to all bot users to warn them about people posing as NGO employees and reminding them to request and check identity documents before engaging with them.

End of the grant

During the grant period, Solidarités made significant progress in the development and trial of the SOLIS Bot among service users in Lebanon.

Post grant

- Chatbot successfully rolled out by additional programme teams across Lebanon.
- New funding from OCHA confirmed to further develop and scale the chatbot.

During the grant period:

179 service users participated in content design

1,280 service users were trained how to use the bot

40,965 service users interacted with the bot

18,763 requests for information or assistance and complaints were made through the bot

Project outcomes and lessons

Outcome
Users find SOLIS Bot convenient and reliable

Among people already familiar with WhatsApp, the chatbot was found to be a reliable communication tool for accessing information and requesting services. Users' experience with the chatbot was positive, with 84% of those who used it to access information from Solidarités reporting it was more convenient than previous channels. Also, 81% of those who used the chatbot to request assistance found it to be more convenient, highlighting it as a faster alternative when the hotline is busy and a cheaper option when they are low on phone credit. Overall, SOLIS Bot was found to be a useful tool to have available in addition to the hotline rather than replacing it.

Lesson
Digital literacy and trust are still a challenge

Digital literacy was a barrier for most dissatisfied users, who stated they did not really understand how the chatbot works. Some users also reported being hesitant to use the chatbot for service delivery requests because they did not trust it to deliver their service request as effectively as a phone call or face-to-face conversation. This could be due to the COVID-19 pandemic interrupting planned sensitisation and training activities, but additional piloting should be conducted to explore user trust and perceptions of reliability more broadly.

Lesson
Staff turnover is expected to be a longer term operational challenge

While there is a wide variety of ways the chatbot might add value to humanitarian programming, successfully integrating it will require dedicated time and sufficiently digitally literate and engaged teams. Interviews with Solidarités staff highlighted some concerns about the challenge of staff turnover and maintaining internal knowledge, digital literacy and ongoing enthusiasm for SOLIS Bot. The chatbot will need ongoing maintenance and updates, and the technical skills and resources this requires will need to be available and budgeted for. Hiring new staff could be a good opportunity to attract people with relevant skills, but could also introduce inconsistencies and operational challenges. Ongoing training and sensitisation of new staff will be necessary to ensure long-term user confidence and buy-in.

Conclusion
A valuable two-way communication channel during the COVID-19 pandemic

Adding voice recognition and machine learning with the support of the COVID-19 adaptation grant helped SOLIS Bot become a direct two-way communication channel with Solidarités service users. By allowing users to send requests using voice notes and providing responses to their voice notes, the chatbot's services and content can now be used by people who do not read or write. More efficient dialogue has also made the chatbot "smarter" and able to direct users to more appropriate and targeted information more quickly. The mass broadcast function also proved successful, reducing reliance on community volunteers and group gatherings to spread information, which was particularly useful during the COVID-19 pandemic.

> *"I do see the potential when it is used for sharing information and increasing awareness among users of Solidarités programming. It's about being transparent with the communities we work with, which is often very difficult to do when implementing projects. This can have a very positive impact on the quality of the work that organisations do."*
>
> **– Solidarités staff user**

> *"We have 300 sites to cover and only three officers, which is not enough to monitor and follow up on all those sites. I had been thinking about what technology might help so was very happy to hear that this could be supported by the SOLIS Bot."*
>
> **– Solidarités programme staff**

What's next for SOLIS Bot

Since the end of the grant, the Solidarités Lebanon team has continued to use the SOLIS Bot extensively, both as an information centre for service users (primarily for referrals and complaints) and, for the first time, as a monitoring tool for programme activities. The chatbot was successfully rolled out by programme teams in other areas in the north of the country and is now mentioned in all Solidarités Lebanon proposals, highlighting its value for field activities in the region.

Several actors from NGOs and other sectors have been in touch with Solidarités to request information about SOLIS Bot, demonstrations of its features and opportunities to partner on new projects. New funding from the United Nations Office for the Coordination of Humanitarian Affairs (OCHA) was also confirmed at the end of 2022 to scale up the chatbot by developing its machine learning capabilities and adapting its features for use across other sectors.

Data sources
- GSMA grant reporting documents.
- External project evaluation by The Research People. Included user surveys as well as KIIs and FGDs with Solidarités staff and external partner.