



ISED A

[Literature review and deployment and
evaluation protocol]

[D3.1]



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ISED A

Organisation: Glasgow Caledonian University (GCU) and University of Alicante (UA)

Main authors: Prof Nancy Lombard (GCU) and Dr Kate Butterby (GCU)

with support from Dr Carmen Vives-Cases (UA) and Rocio Vicente (UA).

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DEM	Demonstrator, pilot, prototype, plan designs	
DEC	Websites, patents filing, press & media actions, videos, etc.	
DATA	Data sets, microdata, etc.	
DMP	Deliverables related to ethics issues	
ETHICS	Deliverables related to security issues	
SECURITY	Software, technical diagram, algorithms, models, etc.	
OTHER	Software, technical diagram, etc.	

Dissemination Level		
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Abbreviations and acronyms

Abbreviations	Short description
DA	Domestic abuse
VS	Victim-survivor
App	Application
AI	Artificial Intelligence
UA	University of Alicante
IP	Intellectual Property
GDPR	General Data Protection Regulation
MARS	Mobile Application Rating Scale
NGO	Non-Governmental Organisation

Executive Summary

This report consists of deliverable 3.1 of the ISEDA project: Deployment and Evaluation Protocol. The deliverable is intended to identify best methodologies and practices in order to support the safe, ethical and legal development and deployment of a chatbot for victim-survivors of domestic abuse. The chatbot will be used by victim-survivors in order to access information about domestic abuse, and also potentially as a place to store evidence that will be permissible at court.

The deliverable was informed via a literature search within major journals and databases for research relating to artificial intelligence, mobile apps and conversational agents in relation to domestic abuse, and a discussion with consortium members from member states. The authors also drew upon one existing app and one chatbot which support survivors of domestic abuse within a Scottish (FollowItApp) and Latin America and Caribbean (SARA) context. The literature and existing technological tools were assessed in order to establish what currently works well in relation to supporting victim-survivors via apps/chatbots, what the negatives are, useful features and a discussion of evaluation.

Many positives were identified in relation to supporting victim-survivors via technology. Overall, these points related to victim-survivors feeling that technology is less-judgemental than people, being able to be more open when using technology and technology being more accessible and convenient than human contact. Positives for young people of using digital technology were particularly highlighted. There were, however, negatives to using digital technology. There was suggestion that machines cannot accurately emulate human characteristics, for example, they cannot read body language or maintain eye contact. Victim-survivors also have concerns over the safety and security of using digital technology, such as whether their data is safe, and whether perpetrators can track them. Though accessibility of digital technology was highlighted as a positive, there were some concerns that it may not be accessible to all, such as if a person does not own or have access to a smartphone, and for some neuro-diverse survivors. These potential pitfalls should be considered and addressed as far as possible within this project.

Many features which could be useful when developing a new chatbot were highlighted within the literature and through research on FollowItApp and SARA. Key examples include the ability to establish rapport with victim-survivors in order to form a trusting relationship, ensuring high levels of safety and security surrounding the chatbot, ensuring the chatbot is inclusive and easy to use for survivors, and being able to provide a speedy, accurate, tailored service to victim-survivors. The importance of evaluation being built into the app was also raised.

In relation to evaluation, the report outlines indicators that have currently been used to assess apps, such as the Mobile Application Rating Scale, and the adapted version. Though these tools have been assessed to be unsuitable for the ISEDA project due to its focus on violence prevention and response, there are elements of their evaluation questions which are deemed useful to inform this project. Ongoing evaluation of the chatbot is key in order to ensure it remains up-to-date, accurate, trauma-informed and is technologically sound.

Guidelines for the safe, ethical and legal deployment of the chatbot have been developed and outlined in this report. Primary considerations are that the chatbot must be 1) efficient and effective, meeting its aims and objectives, 2) safe and ethical, taking into account data protection, potential abuse of the chatbot by perpetrators, and a trauma-informed approach and 3) legalities surrounding the chatbot,

such as ensuring that it is clear who owns the IP address and data, who funds and updates the platform, where it is hosted and the need for solicitors to be involved. There should remain an awareness that legalities may differ between participating countries.

To support the safe, ethical and legal deployment of the chatbot, we have proposed protocols that should be developed and referred to throughout the life of the chatbot. The protocols relate to crisis management, complaints, subject access requests, data ownership and access, disclosures of other crimes, perpetrator 'hacking', information updates, handling sensitive data, language used in the chatbot and an evaluation protocol. This is not an exhaustive list. It is important that all protocols maintain a trauma-informed focus and are updated and developed throughout the project.

The protocol to be followed in case of failure of the chatbot was outlined specifically. It highlights the need to be aware how to respond to the person who is using the chatbot at the time of a failure/glitch, what happens to their data and at what point a human will become involved. There needs to be consideration of who will respond speedily in the case of glitches and failure in order to ensure victim-survivors remain confident using the app.

The chatbot needs to be evaluated in the pilot stage of this project to ensure that it is fit-for-purpose. To do so, groups of victim-survivors, professionals from third-sector women's organisations and police will be asked to participate in supporting this. Evaluation questions for each group have been developed to assess the technological elements of the chatbot, how well it meets the needs of domestic abuse survivors and the extent to which victim-survivors feel safe when using/as a result of using the chatbot. The findings from these questions will be acted upon to develop the chatbot further.

Finally, we were asked to outline the rule for dialogue supervision organisation, continuous chatbot training and dialogue improvement. The proposals for this section are based primarily on views of participants at the consortium meeting. Suggestions include establishing a specialist IT team, ensuring the chatbot is updated continuously and defining the parameters of this, and making sure that development is informed by the voices of NGOs and victim-survivors. The questions of ensuring that funding is available for this was also raised as a key point.

We also highlighted further suggestions to be considered during the implementation stage of the chatbot and beyond. For example, considering the different beneficiaries of that chatbot, and what each of their needs are, how the chatbot is moderated and resourced and linking in victim-survivors with humans at the 'right' point.

Overall, this report sets out considerations that are important to action during chatbot development. They focus primarily on ensuring that victim-survivors of domestic abuse remain safe when using the chatbot, that they are receiving a service that is tailored to their needs, and one that is speedy and accurate. In order that this is the case, we have outlined protocols to be developed, and proposed key questions to be discussed by stakeholders when developing the tool. Further collaboration with members of the consortium and victim-survivors moving forward is key to ensuring the development of a successful chatbot.

1. Introduction

This report explores existing research surrounding domestic abuse apps, chatbots and other technology to identify methodological considerations and practices. Based on this research, we outline a deployment and evaluation protocol for the chatbot.

A chatbot is defined by the Oxford English Dictionary as “A computer program designed to simulate conversation with a human user, usually over the internet” (Oxford University Press, n.d). Chatbots are a type of artificial intelligence (AI) that users can engage with to find answers to questions (Tzelios et al., 2022). For this research, victim-survivors of domestic abuse will be able to access a chatbot in order to support them with questions about domestic abuse, such as where they can seek support, and the process of formally reporting. Also, with consent from victim-survivors, the chatbot will be used as platform to gather court evidence (although this may be country dependent).

Chatbots, also known as conversational agents, smart bots or digital assistants have demonstrated some advantages to support victim-survivors over other app technologies, including that they do not judge victims. Victims may therefore feel less embarrassed to tell their story to artificial intelligence. However, it is important to establish a good rapport with victims, just as humans do, so that they can trust the virtual assistant and feel comfortable speaking to it (Park & Lee, 2020). This is in line with previous research showing that providing emotional (i.e. active listening) and practical (i.e. finding and securing resources) support has significant effects on victims' recovery after abuse. Furthermore, “virtual assistants must have human traits such as kindness and support” (Park & Lee, 2020, p.6). Therefore, conversational technologies could maximize both traits inherited from machines (e.g., non-judgmental) and human imitation (e.g., kindness and empathy) (Park & Lee, 2020).

However, literature focusing on domestic and sexual abuse prevention and response technology is limited, though these apps are widely available (Draughon-Moret et al., 2022). From what does exist, we know that technology can be a useful tool for early support-seeking by support victim-survivors (Viduani et al., 2023) by helping them to find support organisations (Tzelios et al., 2022), and providing tailored support (Hunt et al., 2020). In addition, these new items may help people who cannot initially access more commonly used support channels, either because of barriers associated with the victim-survivor (emotional burden, lack of privacy, difficulty in travelling to a help desk, etc.), or with the services (opening hours, limited available resources, long distances).

Having a Chatbot service also has the advantage of gathering quantitative data about the use and perceived quality by potential victims, as it has been previously observed (Bauer et al., 2020) This information may be useful for policy makers, law enforcement agencies and civil society to provide more targeted services to potential users.

The report will be laid out as follows:

1.1 Literature review

1. Methodology
2. Exploration of existing apps/other technology
3. Positives of apps/other technology
4. Negative of apps/other technology
5. Features and suggestions
6. Evaluating apps
7. Case study: FollowItApp

1.2 Deployment and evaluation protocol

1. Guidelines for a safe, ethical and legal deployment of the chatbot
2. The protocol to be followed in case of failure/problem with the chatbot
3. A list of indicators for the evaluation
4. Rule for dialogue supervision organisation, continuous chatbot training and dialogue improvement.

2. Methodology

This deliverable has been developed in two complementary stages. First, literature was reviewed by researchers at Glasgow Caledonian University and University of Alicante. Second, consultation with current successful app developers and facilitators was undertaken.

2.1 Inclusion criteria

To begin, the Glasgow Caledonian library system was utilised which searches major journals and databases. Search equations and keywords input were (*"apps" OR "chatbot" OR "digital" OR "technology"*) AND (*"intimate partner abuse" OR "domestic abuse" OR "intimate partner violence" OR "domestic violence"*). University of Alicante (UA) searched the following databases: *Cochrane, Pubmed, Embase and Web Of Science*, using the following search equation and keywords: (*"Domestic violence" OR "Gender-based violence" OR "Sexual harassment" OR "Sexual abuse"*) AND (*"Chatbot" OR "online service" OR "conversational agents" OR "machine learning" OR "artificial intelligence" OR "AI" OR "virtual reality"*).

The included studies: a) examined programs or interventions addressed by DA; b) referred to apps or digital technologies; c) presented relevant measures of monitoring or evaluation; d) were written in English or Spanish; and e) were published between 2000 and 2023.

2.2 Data extraction and analysis

References were saved in a bibliographic management tool or excel spreadsheet and reviewed to identify potentially relevant papers. Titles and abstracts were assessed to determine whether papers met the inclusion criteria; those satisfying the criteria were saved as potential documents (first screening). Additional sources were obtained after screening by cross-checking the references of previously identified papers. The selected documents were then assessed with full-text screening (second screening). Data were synthesized and content analysis was performed according to categories related to five dimensions: a) Positives of apps/digital technology, b) Negatives of apps/digital technology, c) Feature and suggestions, d) Evaluating apps, and e) Development and evaluation protocol.

In addition to the literature search, we also interviewed creators of the FollowIt App in Scotland (Media Coop) and Scottish Women's Rights Centre (distributors) to provide an overview of a successful tech tool that has been used to support women experiencing stalking. Within this report, the Followit App is used as a case study to highlight issues we will need to address in the ISEDA chatbot development. We also draw on information from SARA, a digital assistant designed to support women, girls and adolescents at risk of sexual violence. The information on the SARA chatbot is taken from its own website. All the content shown in this report is information provided by the creators and the institutions behind the SARA project.

3. Literature review

3.1. Positives of apps/digital technology for domestic abuse victim-survivors

Existing research studies outline the positives of using digital technology such as apps and chatbots to support DA victim-survivors. These are aspects which could be considered when developing the chatbot for the ISEDA project.

A number of research studies have suggested that victim-survivors who have been subject to DA may prefer to use internet-based interventions as they reduce barriers which may be present when speaking face-to-face with a person, such as feeling more private, less fear of judgement and feeling less intimidated (Glass et al., 2017; Lucas et al., 2014; Storer et al., 2022). Storer et al. (2022) states how use of technology is the norm and preferred method of communication for young people, and hence development of new digital interventions may be more likely to engage them. Research suggests that young women in particular felt that they could be more open with technology and were more likely to seek digital support, due to alleviated fears of being judged (Tarzia et al., 2017).

On the theme of people feeling that they can be more open with and respond more honestly to digital technology, Pickard et al. (2016) found that when discussing topics that participants perceived as sensitive, they responded more honestly to a computer-generated avatar interviewer. Lucas et al. (2014) suggested similar, in that when participants were informed that they were speaking to a digital automated chatbot rather than a real person, they felt more able to disclose. Park and Lee (2021) explored the burdens that victim-survivors who have been subject to sexual violence feel when disclosing to police, and found that many of these burdens (such as financial, emotional, time and privacy) burdens could be alleviated by using a conversational agent. They found that this was due to victim-survivors not feeling as much shame, being able to use it whilst physically comfortable and less burdensome on money and time by using it from

home rather than attending a police station. As with previous studies, they also suggested that this way of communicating is better for young people.

The accessibility of digital technologies was discussed in research as a positive for survivors. Recent research by Emezue et al. (2022) suggests that digital interventions enable survivors to be contacted in a way that suits their needs, and are particularly positive for those who are isolated. Tarzia et al. (2017) suggested similar, in that survivors can access a website or app anytime, anywhere, which means they are more accessible than traditional in-person ways of receiving support.

To sum up, the effectiveness of a chatbot depends on easy and convenient access (being able to connect from anywhere), response availability, assurance of victim confidentiality and security of their queries, reduction of value judgements and re-victimisation, and the ability to offer personalised information to victims depending on the timing of the incident and categories of aggression.

3.2. Negatives of apps/digital technology for domestic abuse victim-survivors

In addition to the benefits of digital technology, research also discusses the negative aspects. It is helpful to present these in order that they can be considered when developing a chatbot for ISED A.

A number of researchers highlight issues around the theme of safety and security, for example, the fears that victim-survivors may have when accessing digital technology, such as downloading and using apps on their mobile phones. These fears include being tracked by the perpetrator, their personal data not being secure and private, and concern that they will not be able to delete data off their device (Afrouz, 2023; Sabri et al., 2023; Xu et al., 2021). Eisenhut et al. (2020) states that the safety and privacy of users should be taken into account to ensure that victim-survivors are not put at more risk by using apps.

Another issue is that of accessibility of digital technologies. Emezue et al. (2022) state that some victim-survivors would not have access to the technology to access digital interventions to begin with, due to socioeconomic constraints, such as the cost of a smartphone or internet connection. If survivors do have access to smartphones and apps, having access to funds to pay for specific features could also be problematic (Sumra et al., 2023). The authors also suggest that neurodiverse, deaf survivors and older survivors may struggle to access digital technologies in their current forms. Furthermore, survivors may experience language barriers which makes using apps difficult, and/or struggle with literacy (Sabri et al., 2023; Sumra et al., 2023).

Brignone and Edleson (2019) evaluated applications for those who had experienced domestic abuse and found that some were not maintained regularly, meaning they had issues such as broken links and outdates information. This could lead to security problems for some survivors, which may put them at risk.

A final theme discussed within the literature is that of digital technologies not being able to emulate human characteristics. For example, apps cannot see hurt and pain, read body language or make eye contact (Storer et al., 2023). Research has suggested that digital technologies cannot replace human contact, but can be used as a pathway in order to direct people to 'real human' services (Tarzia et al., 2017; Xu et al., 2021).

3.3. Features and suggestions

Within the literature, there are several research studies outlining features and suggestions for DA apps, chatbots and other forms of technology. Existing apps took a number of forms, such as providing information, attempts to reduce violence, connecting users to support such as the police or non-governmental organisations and self-assessment.

i. Establishing rapport

Existing research suggests that apps for DA victim-survivors should attempt to establish rapport so that victim-survivors feel comfortable engaging with them, with some research suggesting that existing chatbots are insensitive or inaccurate (Park & Lee, 2021). Ahmed et al. (2021) suggest that in order to make the app feel more personable, and so that the victim-survivor is aware that they are not speaking to a real person, a fictional character or avatar can be used. Decker et al. (2020a) suggest similar, in that animated graphics and videos are used to make apps more interactive. When discussing chatbots, Park and Lee (2020) suggest that they should show empathy within the conversation, particularly at the start and end. The use of language in an emotional context has been discussed by a number of researchers within this arena, with suggestions that language within digital technologies should be reaffirming, validating, sensitive, non-judgmental, positive and friendly (O'Campo et al., 2021; Park & Lee, 2020; Sabri et al., 2023; Tarzia et al., 2017), without, however, normalising dangerous behaviours (O'Campo et al., 2021). In other words, chatbots should enable victim-survivors to feel listened to and reassured, but without the language being used giving the impression that the abusive behaviours they are describing/experiencing are normal/acceptable.

ii. Safety, privacy and security

Existing research highlights the important issues of safety, privacy and security in relation to victim-survivors using digital apps. Privacy is said to be one of the primary concerns of victim-survivors who use apps (Sumra et al., 2023). Westmarland et al. (2013) highlighted that many apps assume that a victim-survivor has private access to their phone, which may not be the case. One recommendation is that security measures should be set up within apps that can distinguish between a victim-survivor using an app, and a perpetrator. The researchers suggest that this could be, for example, based on their keystroke or contextual cues (Freed et al., 2018). Freed et al. also highlight further security mechanisms within the app that could help to ensure that a victim-survivor can use it safely, including the app having a quick exit button, or data being deleted if the password is entered incorrectly. Brignone and Edleson (2019) highlight similar, in that apps should have passwords, hidden areas and the option to disable push-notifications. They also mention that perpetrators may use location services to track victim-survivors, which should be considered by app developers. Young women participants in Tarzia et al.'s (2017) research suggested that apps should be password protected, disguised as something other than domestic abuse, and should log out automatically if the phone is not used for a period of time. They also suggested that victim-survivors could be provided with security information, such as instructions for clearing browsing history. O'Campo et al. (2021) designed a suite of women's safety apps around domestic abuse, for the purpose of screening, safety planning and resource connection, and modified safety planning and resource connection during the pandemic. In line with feedback from women who were experiencing domestic abuse, the researchers included a quick exit button and did not collect or store information via the app in relation to people's names, IP (Internet Provider) addresses or other identifiers. Park and Lee (2020) echoed the importance of victim-survivors being made aware of what happens to any personal information which they may

disclose. When apps are developed with built-in safety features, Sabri et al. (2023) suggest that women should have a demonstration to ensure that they are able to use the app and any emergency features. These aspects above which are important to women should be considered within the current research.

iii. Usability and inclusivity

There is discussion within the literature around ensuring that digital technologies are inclusive and user-friendly. One of the primary suggestions is the inclusion of the option of 'voice' in addition to written text. This can be in relation to the victim-survivor being able to speak into the app, and for the written word to be translated into audio. This not only has the benefit of being quicker for victim-survivors, but it supports those with literacy needs and visual impairments, could recognise speech and pitch detection (to, for example, assess if a situation is an emergency) and gives victim-survivors options about how they wish to communicate (Ahmed et al., 2021; O'Campo et al., 2021; Sumra et al., 2023). Emezue et al. (2022) suggests that currently, victim-survivors who have diverse needs (ethnically, culturally and linguistically) may be disadvantaged due to apps not catering for their specific needs. Other research highlights the importance of apps being available in as many languages as possible and outline how audio communication can support this (Decker et al., 2020b). In relation to language, Sumra et al. (2023) suggests that the majority of apps are in the English language. They suggest that therefore, using voice within apps (they suggest google speech recognition) will enable multiple languages to be recognised and translated. Language used within apps should also be simple to understand (O'Campo et al., 2021; Sabri et al., 2023), and adapted to make them relevant to differing cultures and languages. Sabri et al. (2023) highlight the importance of word choice by giving an example of the word 'assess' which may have negative connotations with immigration or school assessments for some victim-survivors.

A further area discussed within the literature in relation to usability and inclusivity is presenting content in a user-friendly way. Research has suggested that tick-boxes and short questions can be used in order to ensure easier navigation of content and support people with low literacy levels to access it (Ahmed et al., 2021; O'Campo et al., 2021).

iv. Functions of digital technologies

Research suggests that victim-survivors would like digital technologies to provide them with a tailored, individualised response (Decker et al., 2020b; O'Campo et al., 2021; Park & Lee, 2020), for example, providing details of the nearest hospital, police station or non-governmental organisation. There was suggestion that this could particularly benefit minoritized communities in relation to raising their awareness of culturally sensitive services, information regarding legal advice and providing support where language barriers may exist (O'Campo et al., 2021). Sumra et al. (2023) found within their systematic review of domestic abuse apps that some already had the function to be able to connect victim-survivors to places they can receive support locally, by clicking a button within the app.

Information provided by digital technologies should be speedy, accurate and professional (Park & Lee, 2020; Tarzia et al., 2017). Maeng and Lee (2022) found that victim-survivors most often wanted to ask the chatbot questions about punishment for the perpetrator (such as clauses and compensation) and questions about reporting (e.g. how to do it/where/anonymity), support centres and gathering evidence. These categories formed over half of the questions asked by victim-survivors. Other research suggests that digital technologies are/should be developed for a number of reasons in relation to domestic abuse, such as to provide information, raise awareness and equip women with options (Tarzia et al., 2017). Decker et

al. (2020b) found that safety planning tools within apps provide a supportive function in relation to connecting victim-survivors to services, and enhancing the value of existing services.

There is limited discussion within the literature about the use of digital technologies as a vessel for collecting and storing evidence. Some victim-survivors have concerns about storing potential evidence, for example, photographs of injuries, on their phone (Boethius et al., 2023). Within the research, there is suggestion that apps could help to overcome this barrier, by enabling users to store information within the application itself. Sumra et al. (2023) suggest that voice and video recording and capturing images can be utilised via the app and stored this way.

In order that digital technologies continue to serve their purpose, it has been suggested that evaluation should be built into the app itself (Westmarland et al., 2013), as well as consideration being given as to how apps can be used in harmful ways. When discussing chatbots, Xu et al. (2021) state that they should be reviewed, quality checked and evaluated regularly.

v. Endorsement and marketing

Finally, the research touched upon endorsement and marketing of digital technologies. Tozzo et al. (2021) states that 62.6% of young women within their research were not aware of domestic abuse apps, though 79.5% would considering downloading one. Draughon-Moret et al. (2022) found when searching the app store during their research that using “and” or “or” as would be done within search engines and research databases does not work. This means that finding an app is reliant on app producers using helpful word ‘tags’, reviews from other users and advertising and marketing.

Tarzia et al. (2017) suggest that in order to raise their profile, apps can be endorsed by, for example, a celebrity or charity, to appeal to the public that it is ok to use them. Droughton-Moret et al. (2022) suggest that practitioners can identify a selection of apps to suggest to victim-survivors. This not only prevents a victim-survivor from potentially experiencing trauma via needing to use words such as ‘rape’ and ‘domestic violence’ to search for an app independently (Droughton-Moret et al., 2022), but it means that victim-survivors can be made aware that such tools exist. It also means that victim-survivors can receive a demonstration of how to use the app, such as safety features which may exist (Sabri et al., 2023). Brignone and Edleson (2019) support the use of apps being used alongside support from an outside body, stating that some apps are difficult to locate.

3.4. Evaluating apps

Draughon-Moret et al. (2022) carried out a systematic review examining the prevalence and quality of existing violence and abuse prevention and response apps. Using the Mobile Application Rating Scale (MARS – discussed in more detail below), they found that of apps in the English language targeted at sexual violence and intimate partner violence prevention, the quality was average, and only “few of the apps included had any scholarship or evidence associated with their effectiveness” (p.9). For this reason, the researchers concluded that when there is lack of evidence as to whether an app achieves its objectives, it is difficult to recommend its use. Many of the apps studied were information-sharing oriented; and the authors suggest that perhaps testing users’ before and after using the app would provide some basic data on the app's effectiveness in increasing knowledge. The authors also suggest that data privacy should be reviewed, as the use of GPS can be integrated into apps and is useful to support victim-survivors to seek

help, but can also be used by perpetrators of gender-based violence to track victim-survivors. Developed by researchers at Queensland University of Technology in Brisbane, Australia, in 2015, the MARS tool (Stoyanov et al.), was developed to provide a reliable, objective measure of the quality of health-related mobile applications. Evaluating 5 key dimensions (engagement, functionality, aesthetics, information and subjective quality) alongside an extra section focusing on app-specific dimensions, the tool enables ratings on a scale of 1-5 (inadequate to excellent) for 23 items within the 5 categories. In 2021, Roberts et al. adapted MARS in order to make the tool more appropriate for e-tools as well as apps. Though both of these tools are unsuitable to be deployed within ISEDA due to requiring users to be trained in their use, and findings suggesting that MARS is not recommended for evaluating violence prevention and response apps for reasons such as it not accounting for whether apps employ a trauma-based approach (Draughon-Moret et al., 2022), relevant elements of the evaluation questions employed within MARS can potentially be used to support the evaluation of the chatbot.

When considering practical aspects of an evaluation, Scott McGrath, a public safety solutions architect writing for Campus Security Report periodical, outlined 10 points to consider when evaluating mobile apps. Though these guidelines were designed within a US university campus context, most of the elements are still relevant to apps designed and used in other countries and settings (McGrath, 2015):

1. Find out if there is a robust, geo-redundant, highly available platform supporting the app. This is essential.
2. Ask if the vendor stores sensitive data on public data services or maintains secure, private data storage. A private-storage approach is recommended.
3. Evaluate how an app validates the identity of each individual and their affiliation with your institution. Keep in mind the potential risks, including message spoofing; the provision of false information behind a false identity or anonymous reports; and the use of resources by individuals who are not entitled to them.
4. Look for features that work as well offline as online so if users face challenges around mobile connectivity, the app maintains ways to protect their safety.
5. Ask how an app ensures accessibility, including support for people with disabilities and community members with specific access and functional needs.
6. Ensure the app supports delivery of critical information on the end user for both calls made on campus and for 911¹ calls made off campus, without interference from the application in an emergency.
7. Learn if the app provides support for users who have difficulty communicating or have language barriers. Awareness of such challenges dramatically improves the effectiveness and efficiency of first responders.

¹ 911 is the emergency number in the United States, equivalent to 112 which is the European emergency number free of charge from fixed and mobile phones everywhere in the European Union, and the UK.

8. Look for tools that allow the community to become active participants in improving overall campus safety, such as anonymous reporting of crimes or suspicious activity.
9. Inquire about features such as safety timers, personal messaging and related functionality that support community safety during periods of elevated but noncritical risk.
10. Consider integration options with established alert platforms, school-sourced information, 911 and more.

4. Case studies

4.1 FollowItApp

FollowItApp began to be developed in 2014 by media co-op based on conversations with Rape Crisis Scotland workers who had an idea for an app where incidents of stalking could be recorded, and information provided to survivors to support them. In 2017, after extensive work with victim-survivors, support workers, prosecution services and police authorities, alongside continuing applications for funding to enable the work to continue, the FollowItApp prototype was tested with a group of women who had experienced stalking, before being amended based on their feedback. There was also rigorous testing with police and prosecutors to ensure that both the data and the format of the reports in which the data was presented were clear and fit for purpose in supporting investigation and prosecution. This was because there were two parts / purposes to the app: the survivors recording incidents both for themselves and for future reporting to police; and for the services who are going to use the data presented to them to build a case. Both sides needed to be happy with the app before release.

Originally, the app was released as a pilot in 2018 via women's services across Scotland such as Rape Crisis and Women's Aid but it was discovered, during the initial release that only a few women were being signed up to the app. The app was updated to enable centralised delivery through Scottish Women's Rights Centre and an updated version was released in 2019. The creators worked collaboratively with the police, solicitors, women's organisations and survivors in its creation. The app enables recording of details of stalking incidents, including photos and videos. The app provides simple prompts, e.g date and time, location of the incident, what happened, if there was a witness etc instead of relying on a victim-survivor being able to remember to log all the important information about an incident.

Incidents are not stored in the app but uploaded via the app to a secure cloud-based server. Photos and videos included in an incident log can be deleted from the phone once an incident has been logged. Media co-op owns the intellectual property of the app itself. Survivors own and control their data.

While photos and videos may be used as evidence in court, the content of the incident reports per se are not "evidence": they provide the pointers and the detail incident by incident that enable police to hit the ground running when they go off and gather evidence to build a case against the perpetrator e.g. locating relevant CCTV (closed circuit television) footage from a specific location on a specific date; interviewing a witness; etc. The incident reports also record (if the survivor inputs this information) how it made her feel, which is an aide memoire if she needs to speak about the incident in court at a much later date.

Since stalking can take place at any time, in any place, recording a pattern of behaviour can be tough. But many people carry their phone with them in their pockets. That's how FollowItApp can help. FollowItApp is a user-friendly mobile app for smartphones that enables you to record and store information about stalking incidents securely, regardless of whether or not you want to report to the police. Through the app, you can record what is happening to you wherever you are. An incident log for each event, with easy prompts, helps you keep a note of the details and you can add video content, photos, and screenshots. You can recall the incident details when you want. (<https://followitapp.org.uk/>)

Critically, the app cannot simply be downloaded from an app store. Women are signposted to it through support organisations and need to speak with a support worker at SWRC first before they can download the app and start using it. This means that access to the app comes as part of a package of support. There are currently 554 survivors registered for the app. Due to strict controls limiting contact with survivors, SWRC currently only gathers feedback about the sign-up process but not about the app itself, although this is due to be extended. The app has currently only been evaluated as part of a wider evaluation of the Scottish Women's Right Centre. Rigorous evaluation is needed to evidence the effectiveness of the app to secure future funding. It is suggested that evaluation should be built into apps (Westmarland et al., 2013) and used regularly (Xu et al., 2021).

4.2 "SARA"

In the Latin America and the Caribbean context, we highlight the second **case study: SARA**, as a chatbot that provides information and guidance on the risk of violence against women, girls and adolescents.

"Sara" is the name of a sophisticated virtual digital assistant (chatbot) created by a Spanish technology company that was selected by the United Nations Development Program (UNDP) to help women, girls and adolescents who are victims of sexist violence. In half a dozen Caribbean countries (<https://chatbotsara.org>).

This free digital assistant based on Artificial Intelligence aims to detect situations of abuse and guide victims in Costa Rica, El Salvador, Guatemala, Belize, Honduras and the Dominican Republic with useful and quality information from each country in terms of services social and support services, legal advice and also useful services, such as helplines and emergency telephone numbers.

SARA is a digital tool based on Artificial Intelligence and Machine Learning, capable of learning, interacting logically, receiving training and developing automatic learning. It is trained by a team of in-country specialists to ensure that the information and guidance responds to the context, form and language of each location.

It helps to break down the barrier of isolation and facilitates the first step on the road to getting help. With an anonymous machine there is no possible sense of embarrassment or fear, and you feel more able to share your concerns.

5. Deployment and evaluation protocol

This protocol is based on evidence from the literature review, conversations with the developers and facilitators of FollowItApp, information from a meeting with ISEDA partners and interviews, focus groups and information from victim-survivors, third sector organisations and police authorities.

5.1. Guidelines for a safe, ethical and legal deployment of the chatbot

When designing the guidelines for the chatbot we need to consider its efficiency and effectiveness – does it do what it set out to do and does it do it well? Linking back to the literature, there are suggestions to be taken into consideration when implementing a chatbot (Radziwill & Benton, 2017 – see table 1). Though we can gauge efficiency and effectiveness to some extent through the satisfaction of the users – here the added ‘dynamic’ of domestic abuse means that we are looking at more than just customer satisfactions and need to also address the safety of the survivors (physically and in terms of the information they share), the ethics of how the chatbot is used and regulated and the legalities surrounding its use. We identify some of these issues below. Please note because of the nature of the technology this is not an exhaustive list, but rather one that should be considered and added to:

i. Efficiency and effectiveness

- Is the chatbot efficient? Does it do what it needs to do and does it do it better than another service / platform does?
- Is the chatbot speedy and accurate in its responses?
- Is the chatbot effective? What are its main objectives and does it meet these?

ii. Safe and ethical deployment

- Ensure that perpetrators cannot access data that is stored within the chatbot
- Video of what the app does, how to access it etc

Accessibility issues are key for users. The chatbot needs to be simple to use and because of the nature of the initial contact it needs to be self explanatory – or at least have very few operating instructions so victim-survivors can use it quickly and efficiently. Language and access needs should be addressed from the outset.

- Empower victim-survivors through data ownership

It is imperative that victim-survivors are aware of who owns data, how long for, what happens to it and when it is deleted etc. They need to trust the system.

- Consideration if double reporting occurs

There needs to be a safe guard in place firstly in terms of victim-survivors reporting twice on the chatbot and also in terms of malicious dual reporting (see Brooks and Kyle, 2015).

- Consideration as to how the chatbot could be abused by perpetrators

We need safeguards in place to stop malicious dual reporting by perpetrators and to prevent perpetrators accessing data which could be further used to control victim-survivors.

- Consideration that some women using the chatbot will be in unsafe situations

We know that women may make contact when they feel the least safe. The chatbot technology needs to be cognisant of when and why women are making contact and ensure their safety first and foremost. This may involve, for example, an initial question asked to users about their perception of their safety, and guiding them to seek support from emergency services if necessary.

- Ensure chatbot language/imagery is trauma-informed

Designers of the chatbot and those who will be interpreting the data need to undergo gender-based violence training to ensure that they are providing the best support to users.

The words and ways in which the chatbot responds needs to be trauma informed, with sensitivity to how victim-survivors may present and communicate.

- Gender-proofing the chatbot

Many women may be denied wifi or access to wifi, and so ensuring access to the chatbot for women in this situation is imperative. It should be considered if the chatbot can be used offline, or whether data can be saved and uploaded when the user is next online.

- Best practice: not available via app store with support package

We need to consider how women access the app and how it is made available to them. Existing apps such as the FollowItApp is made available in conjunction with women's support provision. This means organisations can then assess if someone is in immediate danger/support with app use. It should be considered if the chatbot will operate in a similar manner.

- Will data be archived?

Would data be archived? If so by whom and where - on a national basis, EU basis?

iii. Legalities surrounding use of the chatbot

- Who owns the IP address and the data, and is this communicated to users of the chatbot?

This needs to be held by an organisation with integrity that will not sell the data or use it for financial gain. Ideally the survivors will own their own data. The FollowItApp in Scotland is owned by Media Coop (a cooperative organisation) and the victim-survivors who use it own their own data.

- Who funds and updates the platform?

It is also imperative that from the start it is decided who funds the payments for the platform and pays for updates. Owners of the FollowItApp Scotland have faced frequent calls for funding because of the need for frequent updates to the platform.

- Which platform will host the chatbot and are there different needs associated with these? Who is in charge of making it compliant with data protection etc?
- Commissioning a solicitor right from the start

This is necessary to firstly to account for the legal discrepancies between the different countries that will showcase and use the chatbot. The legal representative will need to ascertain the legal rights and responsibilities in terms of the victim, the perpetrator and what evidence can be used from the chat bot. Consider if a perpetrator has a right to access data stored on the app about them (and what to do if they request this)

Link this back to legal requests and consider developing a specific protocol to be followed for these kinds of requests (see 5.2).

5.2. Protocols for chatbot deployment

To ensure a safe and effective chatbot deployment, there are protocols which should be created and followed by the chatbots developers and/or those who deliver the chatbot. Some of these are outlined below. Please note that this list is not exhaustive, and there may be protocols relevant to specific countries the chatbot is used within that should also be considered. Protocols should also be cognisant of the legalities relating to different countries. They should also be clear, easy to read and follow and enable speedy action if they need to be referred to.

i. Crisis management plan

A plan should be developed to outline the procedure to be followed if a person using the chatbot is experiencing crisis. This could include, for example, if a person indicates that their or another person's life is in danger, safeguarding of children and vulnerable adults and action to be taken if a user is cut off mid-conversation.

ii. GDPR/subject access requests

How to handle subject access requests should be considered by each country alongside their data protection regulations. This should take account of different people who may make requests for data, such as victim-survivors, perpetrators, police and other agencies. How, where and for how long this data is held, stored and processed should be considered, and made clear to chatbot users.

iii. Data ownership and access plan

It should be clear who owns data that is input to the chatbot, and what the terms of ownership are. The need for explicit consent from the user.

iv. Protocol for complaints

Should users wish to raise a complaint in relation to use of the chatbot, there should be a clear protocol, in place that explain how to do this, including ways of making a complaint, who will respond to the complaint and in what timeframe.

v. Disclosure of other crimes

A protocol should be in place to address action to be taken if a user discloses crimes when speaking with the chatbot, for example, child protection/adult protection/broken bail conditions. Users should be aware what actions will be taken so that they can make a choice around what information they wish to disclose.

vi. Protocol to protect chatbot from perpetrator hacking

A protocol needs to be developed to recognise and devise a response as to what would happen if a perpetrator hacks the chatbot

vii. Evaluation protocol

A protocol outlining how the chatbot will be evaluated, who will take responsibility for this and in what format this will occur

viii. Protocol for information update

A protocol for when information should be updated (how often_ and who has responsibility for this

ix. Protocol for handling sensitive data

How and what data input by victims will be stored and where it will be stored.

x. Language protocols

A protocol to outline what kind of language should and should not be used within the chatbot. For example, ensuring that language is gender sensitive and trauma-informed.

xi. Protocol for disclosure of crime

What action needs to be taken if a crime is disclosed during use of the chatbot, and who takes this action.

xii. Protocols need to be trauma-informed

All protocols should be written from a trauma-informed perspective. It would be advisable to do this alongside those within women's organisations who have expertise in this area. Attention should be paid to sensitive wording, displaying empathy, not victim-blaming and understanding the ways that women who have been subject to trauma may present and communicate.

These protocols are not an exhaustive list and should be adapted and updated as the project progresses.

5.3. The protocol to be followed in case of failure/problem with the chatbot

- If woman is in active danger – call 112 (or equivalent local emergency number for a specific country)
- If logging an incident when not in active danger and the chatbot fails, reassurance that their data which has been input to the app is still secure (can a pop up message say this, so long as is it accurate?)
- Section on app for survivors to report glitches/app failure? Could this be a link to a central website with all the wider information available? Response needs to be quick in relation to identification and solution.
- Important that the victim is not encouraged to go through / help with tech support.
- What will happen if there are questions that the chatbot cannot answer?
- If needs be will there be a referral to the human operator? Will the victim be notified that this could / will happen?
- If there is a glitch/failure, there is concern by survivors that the platform is not secure and communicating around this about security and how soon it will be resolved is important

- Are there resources to response to failures/glitches so, who is moderating - how able would a tech person be to respond to a survivor? Doing this increases costs – need adequate resourcing to update
- Responses need to be quick otherwise survivors will lose confidence in the chatbot

5.4. Indicators for the evaluation

The purpose of an evaluation according to Zarinpoush (2006) are to help to identify criteria for successes and challenges, lessons learned, areas for improvement, and new goals. Evaluation helps you understand the progress, success, and effectiveness of a project (ibid), in this case, the chatbot designed by ISEDA.

To do this we need to highlight the aims and objectives of the chatbot to then evaluate whether these have been met. The chatbot:

- will gather and provide key information about domestic abuse, victim support services and criminal justice proceedings.
- will perform a first level of risk assessment and direct/advise victim-survivors on recommended course of actions.
- will serve as a medium to reach out to police officers for reporting if/when the victim feels ready to take that step.

To evaluate the level of success, we will ask three groups of stakeholders to help us to conduct a pilot evaluating the use of the technology: group of (previous) victim-survivors supported by domestic abuse organisations; professionals from third-sector women's organisations and police. We will also ask domestic abuse organisations and the police in the chosen territories to use and evaluate the chatbot in terms of whether it achieves its original objectives.

We envisage we will focus on the evaluation questions presented below (these can be developed as needed) to assess the effectiveness and efficiency of the chatbot. These questions are based on addressing the aims of the chatbot, and existing literature around evaluating applications, such as that presented by Stoyanov et al. (2015), Roberts et al. (2021) and McGrath (2015).

General evaluation questions for all three groups	
1.	Does the chatbot provide information to victim-survivors that is: a. Relevant? b. Up-to-date? c. Useful?
2.	Does the chatbot support women to be safe? In what ways?
3.	How accurate is the chatbot voice recognition?
4.	What are your thoughts on the language used by the chatbot (for example, did you find it empathic, sensitive, warm?)
5.	How accurately/fast do the chatbot features (functions) and components (buttons/menus) work? (Stoyanov et al., 2015).
6.	How easy is it to learn how to use the chatbot; how clear are the menu labels/icons and instructions? (Stoyanov et al., 2015).
7.	Do all components with the chatbot (buttons/menus) work? Are there any error messages, glitches, crashes? (Roberts et al., 2021)
8.	Did the chatbot direct the user to a human at an appropriate time. Why/why not?
9.	Were you provided with information about how the chatbot stores and processes your data? How safe or unsafe did this make you/do you think this would make victim-survivors feel?
10.	What are the main strengths of the chatbot?
11.	In what ways could the chatbot improve?
12.	[if relevant] How helpful/accessible do you feel the chatbot would be in supporting someone with communication/language needs?

Evaluation questions for victim-survivors	
1.	Did you find the chatbot easy or difficult to use? Please explain your response.
2.	Did you feel that the chatbot understood what you were asking it to do?
3.	Does the chatbot need to be customised to make it more user friendly for you to use? Can you change settings such as sound, content, notifications, email/SMS reminders, display more to your liking? (Roberts et al., 2021)
4.	How safe did you feel using the chatbot?
5.	Would you consider using this chatbot in the future to seek information/record evidence?
6.	How helpful did you find the chatbot compared to other 'help sources' – speaking on the phone/email/text/in-person etc.

Evaluation questions for third-sector organisations	
1.	Does the chatbot provide women with useful support?
2.	How useful do you think the chatbot is as a tool to inform victim-survivors about services such as yourselves?
3.	To what extent do you feel that the language used by the chatbot is sensitive to individuals who have experienced trauma?
4.	Is the chatbot content (visual information, language, design) appropriate for the target audience? (Stoyanov et al., 2015).
5.	Would you recommend the chatbot to victim-survivors of domestic abuse?

Evaluation questions for police authorities	
1.	How well does the chatbot sit alongside existing police support/protocols?
2.	Does the chatbot help to gather evidence that the police can use?
3.	How useful do you think the chatbot is as a tool to inform victim-survivors about services offered by the police in relation to reporting domestic abuse?
4.	Do you feel that the chatbot is trauma-informed?
5.	Is the chatbot content (visual information, language, design) appropriate for the target audience? (Stoyanov et al., 2015).
6.	Would you recommend the chatbot to victim-survivors of domestic abuse?

5.5 Rule for dialogue supervision organisation, continuous chatbot training and dialogue improvement.

The below bullet points are based on input from participants at the consortium meeting in Barcelona. This list is not exhaustive and should be added to as and when required. The deliverable 3.2 by SSG should also be referred to for more information relating to this section.

- These need to be continuous and to be provided by informed third sector organisations (and potentially a victim-survivor group).
- The ability of the chatbot to detect abuse by perpetrator
- Whichever organisation is in charge of this needs to have specialist IT capacity to ensure continuous training and development.
- There also needs to be a dedicated team for the continuous supervision to the chatbot.
- Whoever is in charge of the supervision needs to re-evaluate all the questions that cannot be answered by the chatbot and use these to update.
- Needs to consider those who are deaf or have other disability – use of SMS rather than a phone call if in danger.
- There needs to be reports by third party experts about success rates
- Financial independence – who funds this?
- Is there EU continuity funding for technology – is it their responsibility to continue to fund what they have initiated?

5.6. Further considerations

- What are the ethical considerations of asking women who may be in active danger for feedback on the chatbot?
- How do we access victim-survivors for feedback who might only access the chatbot in times of crisis?
- We need to think about the different users / beneficiaries of the chatbot and which each of them requires from it
- What are the purposes of the chatbot and how can we evaluate whether it meets each of these and how successfully?

- We also need to consider here at which point the victim-survivor gets referred to a 'human' and whether the chatbot is getting this right?
- Funds should be provided to third sector organisations so they can be empowered to take ownership and control of technology that they use
- What is the business model of SSG with the chatbot? Is there a conflict between deployment and the marketing plan of SSG?
- If an NGO moderates the chatbot this would need resourcing - staff time, training and expertise
- How available will the chatbot be - 24/7? How would this be moderated?
- Tech Partner who is able to provide service without profit model?
- Funding / resourcing for ongoing development
- Sponsorship as an option?

6. Conclusion

The research undertaken to complete this report suggest the importance of ensuring that chatbots for domestic abuse are developed with sensitivity towards victim-survivors. They must be accurate, speedy and trauma-informed, whilst delivering a personalised service to victim-survivors. Prior to and throughout the life of the project, protocols should be developed and adhered to in order to ensure that the chatbot remains ethical, safe and up-to-date. The questions outlined in 5.6 should be considered and collaboration between chatbot designers, domestic abuse experts and victim-survivors must continue to ensure that a fit-for-purpose product is developed.

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