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"ALL OF US, MARIAS" APP: TECHNOLOGY AS A FOUNDATION IN THE FIGHT AGAINST VIOLENCE AGAINST WOMEN

APLICATIVO "TODAS NÓS, MARIAS": A TECNOLOGIA COMO ALICERCE NO COMBATE A VIOLÊNCIA CONTRA A MULHER

APP "*TODAS NOSOTRAS, MARÍAS*": LA TECNOLOGÍA COMO FUNDAMENTO EN LA LUCHA CONTRA LA VIOLENCIA HACIA LAS MUJERES

ABSTRACT

Objective: To analyze the functionality of a new technological tool that helps protect women victims of domestic violence, implemented by the *Brigada Militar* in the city of Santa Maria, RS, through a simulation process with the stakeholders involved.

Context: Violence against women is deeply rooted in historical and cultural factors, sustained by patriarchal structures that still persist in contemporary society. At the same time, technological advancements are being observed in people's daily lives, with the development of digital tools aimed at preventing domestic violence.

Diagnosis: The research analyzed the implementation of the application in Santa Maria, RS, focusing on the functionality of the "Panic Button," operated in partnership with CIOSP. Aspects such as ease of use, security offered, and practical contribution to the effectiveness of MPUs (Urgent Protective Measures) were evaluated. The tool's effectiveness and results indicate that it provides women with a greater sense of security.

Originality/Value: The study stands out for integrating technology, public policies, and social protection, offering a practical analysis of an innovative resource for combating violence against women in a specific municipal context. The applied approach allows us to understand how technology can directly protect the physical and emotional integrity of victims. It also highlights the importance of continuous investment by the government and systematic monitoring of the application of these tools to ensure their accessibility to women at risk. Thus, it can be described as a promoter of gender equity and social justice. Its limitations stem from low social awareness of the severity of violence against women and the lack of opportunities for victims of violence to participate.

Keywords: Panic Button, Emergency Protective Measure, Santa Maria, Domestic violence against women.

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RESUMO

Objetivo: Analisar a funcionalidade de uma nova ferramenta tecnológica que auxilie na proteção da mulher vítima da violência doméstica, pela *Brigada Militar* na cidade de Santa Maria – RS, por meio do processo de simulação com os atores envolvidos.

Contexto: A violência contra a mulher está profundamente enraizada em fatores históricos e culturais, sustentados por estruturas patriarcais que ainda persistem na sociedade contemporânea. Paralelamente, observa-se avanço da tecnologia no cotidiano das pessoas, com desenvolvimento de ferramentas digitais voltadas à prevenção da violência doméstica.

Diagnóstico: A pesquisa analisou a implantação do aplicativo em Santa Maria/RS, com atenção ao funcionamento do "Botão do Pânico", operado em parceria com o CIOSP. Avaliaram-se aspectos como facilidade de uso, segurança oferecida e contribuição prática na efetividade das MPUs. O grau de eficácia da ferramenta e os resultados apontam que ela proporciona às mulheres sensação de maior segurança.

Originalidade/Valor: O estudo destaca-se ao integrar tecnologia, políticas públicas e proteção social, oferecendo uma análise prática para um recurso inovador de enfrentamento à violência contra a mulher em contexto municipal específico. A abordagem aplicada permite compreender como a tecnologia pode atuar de forma direta na proteção da integridade física e emocional das vítimas. Destaca, ainda, a importância de investimentos contínuos do Poder Público e um acompanhamento sistemático da aplicação dessas ferramentas, para garantir sua acessibilidade a população feminina em situação de risco. Assim pode ser descrita como promotora de equidade de gênero, justiça social e suas limitações decorrem da baixa conscientização social sobre a gravidade da violência contra a mulher falta de possibilidade da participação das vítimas de violência.

Palavras-chave: Botão do Pânico, Medida Protetiva de Urgência, Santa Maria, Violência doméstica contra mulheres.

RESUMEN

Objetivo: Analizar la funcionalidad de una nueva herramienta tecnológica que ayuda a proteger a las mujeres víctimas de violencia doméstica, implementada por la *Brigada Militar* de la ciudad de Santa Maria, RS, mediante un proceso de simulación con los actores involucrados.

Contexto: La violencia contra la mujer está profundamente arraigada en factores históricos y culturales, sustentada por estructuras patriarcales que aún persisten en la sociedad contemporánea. Simultáneamente, se observan avances tecnológicos en la vida cotidiana de las personas, con el desarrollo de herramientas digitales destinadas a prevenir la violencia doméstica.

Diagnóstico: La investigación analizó la implementación de la aplicación en Santa Maria, RS, centrándose en la funcionalidad del "Botón de Pánico", operado en colaboración con CIOSP. Se evaluaron aspectos como la facilidad de uso, la seguridad ofrecida y su contribución práctica a la eficacia de las UPM. La eficacia y los resultados de la herramienta indican que proporciona a las mujeres una mayor sensación de seguridad.

Originalidad/Valor: El estudio destaca por integrar tecnología, políticas públicas y protección social, ofreciendo un análisis práctico de un recurso innovador para combatir la violencia contra la mujer en un contexto municipal específico. El enfoque aplicado nos permite comprender cómo la tecnología puede proteger directamente la integridad física y emocional de las víctimas. También destaca la importancia de la inversión continua del gobierno y el monitoreo sistemático de la aplicación de estas herramientas para garantizar su accesibilidad a las mujeres en riesgo. Por lo tanto, puede describirse como un promotor de la equidad de género y la justicia social. Sus limitaciones se derivan de la escasa conciencia social sobre la gravedad de la violencia contra las mujeres y la falta de oportunidades de participación para las víctimas.

Palabras clave: Botón de pánico; Medida de protección de emergencia; Violencia Doméstica contra las Mujeres.

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INTRODUCTION

Violence is "a phenomenon that has always accompanied human beings throughout their historical trajectory and in their most varied activities, whether in a physical or cultural form" (Barazal, 2014, p. 77). As a social phenomenon, violence materializes in diverse forms and qualifications according to the historical, cultural, and developmental context of each era. Ceccarelli (2006, p. 118) explain "[...] there is no social context, regardless of the mode of production, that is exempt from creating situations that break the social bond, thereby producing violence," concluding that "[...] violence has always existed, although in each era, in each historical context, it presents itself with its own distinct face."

Acknowledging the presence of violence as a part of human history and the necessity for its control, its many nuances must be addressed according to their specific types, characteristics, and the population groups affected. It is with these particularities in mind that violence perpetrated against women receives, in this study, a theoretical-academic treatment that seeks to traverse some of its most current causes and possible new forms of confrontation, especially through technology.

The recognition of the existence of gender-based violence can be considered a modern development, as evidenced, for example, by national legislation such as the Brazilian Federal Constitution itself, in paragraph 8 of Article 226, and the well-known Maria da Penha Law, Federal Law No. 11,340 (Brazil, 2006), enacted on August 7, 2006. These laws are the result of the understanding that the specificities of such violence viscerally affect individuals of the female gender and, transversely, all of society. Gomes, Minayo, and Da Silva (2005) state that violence against women is a violation of human rights, and it is estimated that this type of violence causes more deaths among women aged 15 to 44 than cancer, malaria, traffic accidents, and wars combined. Additionally, data from 2025 indicate that in the first half of that year, there were over 594,000 service contacts at the Federal Government's Women's Assistance Center (2025), with 86,000 of these pertaining to reports of violence.

Beyond understanding the legislative advances in women's protection, there is a need for the uninterrupted improvement of the tools made available, particularly for the public agencies responsible for this matter, so that the legislative intent is effectively achieved. Numerous initiatives have already been implemented in the country—many successfully, others less so—but a recurring feature in a significant portion of these cases is the lack of long-term sustainability of these actions for various reasons.

In the state of Rio Grande do Sul, successful and enduring initiatives include the operations of the Maria da Penha Patrols of the *Brigada Militar* [1], teams established to monitor women victims of violence who have a judicial protective order in their favor, as well as the creation of the Specialized Police Stations for Assistance to Women (DEAMs) by the Polícia Civil. Other initiatives have not achieved the consistency, interest, or governmental or technical support necessary for their maintenance. Examples of this include the "Lilac Room" (*Sala Lilás*) for the care of women victims within the General Forensics Institute, and projects such as "*Metendo a Colher*" (literally "Sticking the Spoon In," meaning "Intervening") by the Superintendence of Penitentiary Services.

In the technological field, an initiative that received considerable publicity at the time of its launch in 2014 was the smartphone application PLP 2.0. This innovation originated from a cooperation agreement between the Executive Branch, through the Rio Grande do Sul Secretariat of Public Security, the Public Defender's Office, the Public Prosecutor's Office, the Judiciary, and the Non-Governmental Organization Themis – Gender, Justice, and Human Rights. This work was not effectively continued after its implementation as a pilot project in a neighborhood of Porto Alegre. Specifically on this matter, Dall'Igna (2017, p. 131), addressing technological resources for the protection of women victims of violence, analyzes that "[...] within the now-defunct State Department of Human Rights were the Divisions of Public Policies for Women and Public Policies

1 Brigada Militar is the name given to the police of the Rio Grande do Sul state.

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for Vulnerable Groups, and it was there that the supervision and monitoring of the PLP 2.0 application took place. Today, this supervision is placed within a sector not suited for prevention, so it has, apparently, ceased to be a priority policy"

On March 9, 2021, the Public Prosecutor's Office of Rio Grande do Sul launched a smartphone application aimed at women victims of domestic violence. In this specific case, it presents itself as a "panic button" that is provided to these women and, when used, alerts individuals previously registered by the woman who is a victim of violence; it does not directly trigger security agencies or the public protection network. It should be noted, however, that this initiative is recent and is in the implementation phase.

However, despite these initiatives, difficulties in confronting violence against women are still observed. Additionally, Law 11.340/2006 established Urgent Protective Measures (Medidas Protetivas de Urgência - MPU) as one of its tools, aiming to preserve the physical, psychological, and moral integrity of women in situations of domestic and family violence. MPUs are legal protective instruments that acknowledge the dynamics and characteristics of gender-based violence against women, as they are granted in situations where the risk may be aggravated. Data from the Secretariat of Public Security of the State of Rio Grande do Sul show that in the 2020-2021 biennium, the rate of non-compliance with MPUs ranged from 6% to 12% (SIP/PROCERGS, 2022, as cited in Secretaria de Segurança Pública, 2022; Coordenadoria Estadual da Mulher em Situação de Violência Doméstica e Familiar, 2022). Based on this data, a need was identified to undertake efforts in the search for effective solutions to this problem and for the protection of women victims of violence in the city of Santa Maria-RS. This led to the proposal of building a smartphone application tailored to the local cultural, populational, and regional specificities, as well as its technical-operational feasibility. Thus, the implementation of this tool aims to improve victim support and be more decisive in emergency situations, thereby promoting the security of women victims of gender-based violence. Therefore, the objective of this work is: *To analyze the functionality of a new technological tool that aids in the protection of women victims of domestic violence, by the Brigada Militar in the city of Santa Maria – RS, through a simulation process with the involved stakeholders*. Within this context, the following sections will present the diagnoses, developments, and presentation of this tool.

REVIEW OF THE PROBLEM-SITUATION

With the aim of protecting victims of violence, Law 11.340/06 (Brazil, 2006), known as the Maria da Penha Law, was established. Considered one of the best laws in the world for the protection of women, the Maria da Penha Law is the culmination of results that bring together social, political, and feminist articulation (Brazil, 2006). According to Piovesan and Pimentel (2007), this law consolidated instruments of substantive equality by ensuring the effectiveness of constitutional rights, thus concretely addressing violence against women. To strengthen this confrontation, trained professionals are essential, especially military police officers, who deal with both professional demands and personal situations of the same nature.

In this scenario, the Maria da Penha Patrol was created by the *Brigada Militar* in Rio Grande do Sul as part of an articulated protection network composed of various initiatives and public agencies. In Santa Maria, the Integrated Center for Public Security Operations (CIOSP) brings together different security institutions, resulting from federal, state, and municipal funding, in addition to support from the Public Prosecutor's Office for Labor and CONSEPRO. The state government also launched, in 2017, the Integrated Security System with Municipalities (SIM/RS) aiming to standardize service and facilitate access through a single emergency number, inspired by international models that promote efficiency and resource savings (Bordin, 2017).

The use of technology in public security has been continuously improving; trends such as artificial intelligence, machine learning, cloud computing, and Big Data already enable the analysis of crime patterns to guide more effective

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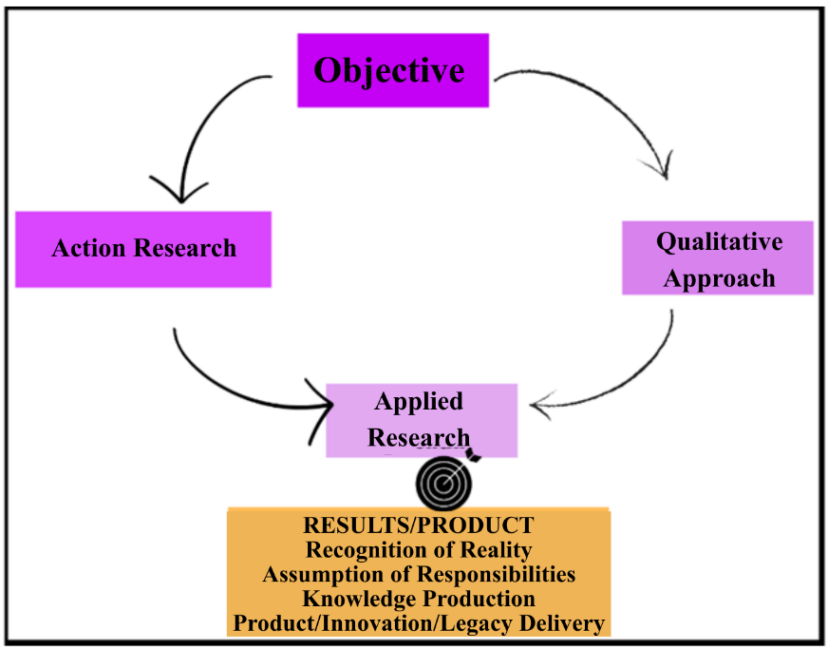
actions (Nunes & Montarroios, 2021). Zhang and Adipat (2005) highlight the importance of testing mobile applications, noting that as technologies are rapidly advancing, it is crucial to develop specific guidelines for testing the usability of these apps. Llorens-Vernet and Miró (2020) emphasize the need for an application to be tested by real users before its public release, ensuring that its functionalities correspond to the expectations and limitations of the target audience. Given the complex context, as it involves victims of violence, the tests simulated real-life situations with the participation of members of policing teams, but without the direct involvement of the victims themselves. The tests evaluated intuitive navigation and ease of use, observing whether the application's functionalities were aligned with the tool's central purpose and whether access to information occurred in a quick and efficient manner, thus enhancing the effectiveness of victim support (Llorens-Vernet & Miró, 2020).

The development of an application to respond to domestic violence incidents was initiated, planned to prioritize victims at higher risk (with granted MPUs) by integrating efforts between the Judiciary and the Military Police. Although similar initiatives already exist in other states (Tavares & Campos, 2018), this represents a regional innovation and an advancement in confronting this form of violence. The relevance of this study is highlighted by the significant lack of systematic evaluations on the effectiveness of crime prevention applications (Wood, Ross, and Johns, 2022). The authors highlight that the majority of applications aimed at violence prevention lack rigorous evaluations and that many are not evidence-based in their design.

The methodological procedure used for the development and evaluation of the technological tool is presented in Figure 1, which describes the research design, indicating the choices made throughout the process in order to highlight the transparency of the procedures and enable the safe and reliable replication of the research (Silva, 2018). The research uses a qualitative approach at the specific case.

The tasks were organized and the actions were structured to attend of the research objective that is evaluate a new mechanism for confronting violence against women. The purpose of the study was to create a tool that is easy to use, intuitive for any mobile phone user, and, fundamentally, that possesses an interactive system adapted to the needs of its users (Llorens-Vernet & Miró, 2020)

Figure 1
Research Design



Source: The Author (2022).

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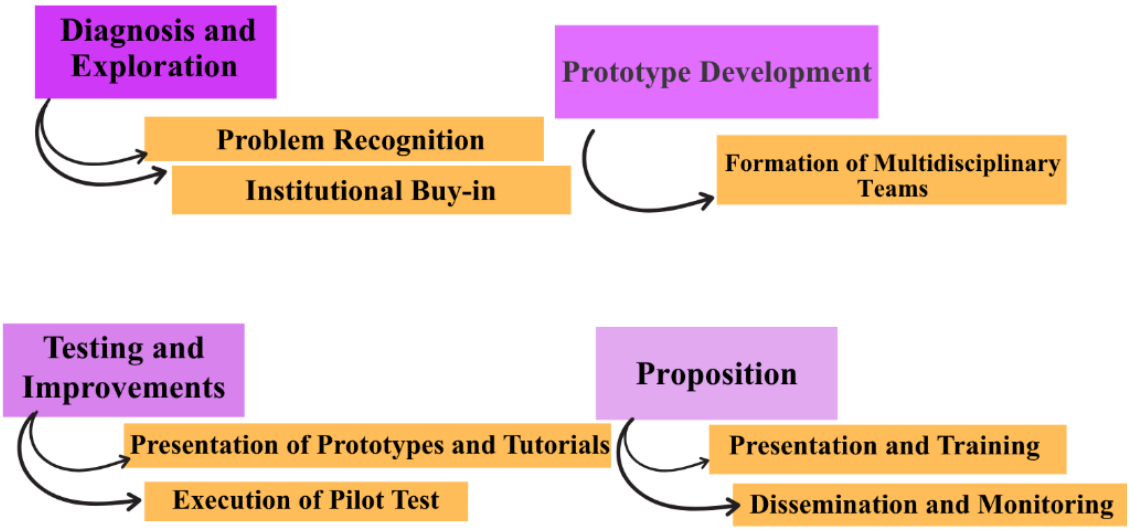
Application Development

The first step taken was to understand the protective effectiveness of the MPU granted in favor of women victims of domestic violence. This was based on the premise that the "mere existence of a judicial order," from the perspective of a potential aggressor, may not be sufficient to ensure the woman's physical integrity.

Recognizing this "hypothetical problem--situation", the researcher proposed to the team at the Integrated Center for Public Security Operations (CIOSP) that they become involved in confronting the dilemma and take ownership of the state's problem-solving mandate. This recognition and assumption of institutional responsibility, both necessary for the application's development, required the execution of specific stages as outlined in Figure 2.

Figure 2

Application Development Stages.



Source: The Author (2022).

The four stages required for the application's development are specific and straightforward to structure. This is due to the clarity of the problem—notwithstanding the complexity of the actions, the multidisciplinary nature of the topic, and the need for interagency integration and cooperation—as well as the strict adherence to the Action-Research methodology.

The first stage, Diagnosis and Exploration, answered questions such as, "*What is the actual problem to be confronted?*" and "*Whose responsibility is it?*". The recognition of a real and current problem to be faced, as well as its nuances, affected population, motivations, and impacts on society and public spending, were debated. This stage was divided into two phases: Problem Recognition and Institutional Buy-in. At that point, specific actions were developed to understand the problem and learn about its causes, identifying potential difficulties and facilitators for addressing it. Based on this, actions were developed to achieve institutional buy-in through meetings with public institutions related to the issue. Discussions were also held regarding who bears the responsibility for confronting the problem and concerning the obligation and motivation for the involvement of the working group and their respective organizations, thereby clarifying the level of their institutional commitment.

At this point, the "whys" behind the agents' involvement in the work were addressed. A line of inquiry was proposed concerning personal and institutional responsibilities, as well as the civic values of each agent involved in the problem.

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Therefore, in that preliminary phase, the question of "*what is the territorial scope to be served?*" was identified, referring to the environment to which the target audience of the work belongs. The second stage, Prototype Development, marked the beginning of practical interagency actions, starting with the formation of multidisciplinary teams composed of members from each institution and the definition of demands for the developers. The actions in these phases consisted of meetings with the involved institutions and with the application's technical developers.

Furthermore, in the second stage, questions such as "*what is the method of confrontation?*" or "*what is the right moment/opportunity for implementing actions?*" were answered. This prompted a discussion about what had already been done or what already existed, as well as potential future practical or strategic actions. The analysis of future strategies investigated possible existing scenarios for the implementation of the research and the effective development of the proposed work. The political scenario, corresponding to the interest of public managers in executing actions of the proposed nature; the institutional scenario, referring to the current situations within the involved institutions, their particularities, responsibilities, personnel and material capacities, and mandatory projects and actions that must also be addressed; the economic scenario, in terms of the financial situation of the population and the involved institutions; and the social scenario, as the final condition and acknowledgment of the socio-moral and political moment in which the action must be developed, were all considered.

The third stage, Testing and Improvements, which will be presented in the next section, was divided into two phases. The first comprised the Presentation of Prototypes and Tutorials and focused on specific actions for the application's development. Development and alignment meetings were held with the technical developers, along with the presentation of prototypes and the definition of uses and functionalities. In the second phase, simulations and tests were conducted with a test group composed of military police officers from the *Brigada Militar*—specifically, members of the Maria da Penha Patrol and the Emergency Call Center - Operations Room (SOP), located at CIOSP—as well as military police officers from the Police Intelligence Section with access to police information systems (SIP) – Integrated Queries, and municipal guard officers. The focus of the pilot test was on the performance of public security professionals, as the tool aims to improve their activities in confronting violence against women. The decision was made to work with a simulated context, as it would not be feasible to conduct tests with the participation of victims with MPUs, since such a situation could put them at risk. Thus, after the pilot tests were carried out and any detected flaws were corrected, it was possible to move on to the final stage of implementing the application.

The fourth and final stage is the Proposition, and its phases are the Presentation and Training and the Dissemination and Monitoring of the Innovation. This stage is characterized by the release to the general community and the permanent monitoring of its execution by the operators and technical developers.

These stages of technological tool development were based on the Action Research Methodology (Thiollent, 2011) and were composed of specific phases involving interrelated, specific actions, forming a complex whole that resulted in the materialization of the final product. The sequence of phases and actions had to be strictly observed. Because a methodological failure could compromise a subsequent phase or stage. Therefore, it was essential to observe the sequential of the proposed activities from phase to phase, and the Proposition stage and its phases must be developed following this logic. Each stage and phase of the work proposal has specific Research Strategies that align with the Action-Research methodology. Data collection was carried out throughout all stages of the application's development, from understanding the problem to testing the technological tool. Observations were made of the working group's meetings, which was constituted by representatives from the different public security organizations that act in confronting violence against women. In addition to the meetings with these multidisciplinary teams, the

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meetings with the developers were also analyzed. The analyzed documents included data and records of police incidents related to situations of violence against women with granted MPUs. Furthermore, notes and records made during the pilot tests and reports from the application and the CIOSP incident response system were examined in order to evaluate the effectiveness of the technological platform.

The debates and discussions held, combined with the individual understandings and experiences of the group members, were fundamental to the robustness of the outcome and the final result construction. Participant observation occurred through the insights of the Working Group members during meetings in the diagnosis and exploration stage and in the prototype development itself, where demands were identified and forwarded to the application developers.

The multidisciplinary nature of the Working Group's members was essential for broadening the perception of the problem and its multiple complexities. Professionals trained in assisting women victims of violence were represented by male and female police officers from the Maria da Penha Patrol and by a municipal servant with an academic background in Psychology. The necessary knowledge in the area of public security intelligence was provided by military police officers active in that sector. The members of the municipal guard contributed with their expertise in operating on the city's public roads.

To better visualize each stage and phase, as well as the necessary actions in each one, Table 1 is proposed below:

Table 1

Phases and Actions of the Application's Implementation.

STAGE		PHASES	RESEARCH STRATEGIES	
DIAGNOSIS AND EXPLORATION		Problem Recognition	· STUDY THE PROBLEM · UNDERSTAND THE CAUSES · IDENTIFY POTENTIAL DIFFICULTIES/FACILITATORS	LITERATURE REVIEW DOCUMENTARY RESEARCH PARTICIPANT OBSERVATION
		Institutional Buy-in	· MEETINGS WITH THE INVOLVED INSTITUTIONS: BRIGADA MILITAR, MUNICIPAL GOVERNMENT, JUDICIARY	
PROTOTYPE DEVELOPMENT		Formation of Multidisciplinary Teams	· IDENTIFICATION OF MULTIDISCIPLINARY TEAMS	BI-WEEKLY MEETINGS WITH WORKING GROUPS • PARTICIPANT OBSERVATION • TESTING AND SUBSEQUENT EVALUATION BY THE WORKING GROUP • PROPOSAL OF IMPROVEMENTS AND CORRECTIONS TO THE DEVELOPERS
		Demands for the Developers	· HOLDING CLARIFICATION MEETINGS WITH DEVELOPERS	
RESEARCH	**TESTING AND IMPROVEMENTS**	Presentation of Prototypes and Tutorials	· DEVELOPMENT AND ALIGNMENT MEETINGS · PRESENTATION OF PROTOTYPES · DEFINITION OF USES AND FUNCTIONALITIES	
		Conducting Pilot Tests	· HOLDING MEETINGS WITH THE TARGET AUDIENCE · FAMILIARIZATION OF TARGET AUDIENCES AND PUBLIC SERVANTS WITH THE TUTORIALS · TESTING	
	PROPOSAL	Presentation and training	· PRESENTATION TO INSTITUTIONS · TRAINING OF PUBLIC SERVANTS	• INNOVATION LAUNCH • IMPLEMENTATION MONITORING • POTENTIAL IMPROVEMENTS OR ADJUSTMENTS
		Dissemination and Follow-up	· PUBLIC RELEASE · MONITORING BY OPERATORS AND DEVELOPERS	

Source: The Author (2022).

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Application Presentation "*Todas nós, Marias*"

'*Todas Nós, Marias*' smartphone application is a technological innovation developed by a Working Group composed of teams from public security agencies and the Santa Maria Municipal Government. This group collaborated with the software development company responsible for the technological operations of CIOSP SM.

'*Todas Nós, Marias*' application is intended for women who are victims of domestic or gender-based violence and have been granted an Urgent Protective Order (MPU) by the Specialized Court for Domestic Violence in the District of Santa Maria. The application is installed on the protected woman's smartphone and contains data relevant to her protection, including her personal information and that of the perpetrator who prompted the court order. A designated official from the court that granted the MPU is responsible for downloading the application and providing the woman with guidance on its functionality.

Following the installation of the application and after the protected woman receives her instructions, she becomes responsible for all access to the app and for activating the panic button. It is then the responsibility of the *Brigada Militar*, through its emergency response system, operations room, and vehicle dispatch, to promptly take the necessary steps to send a police unit to the activation location.

The application was designed to be user--friendly and intuitive, making it accessible to individuals with varying levels of digital literacy. It aims to be a secure, practical, and effective tool for its primary purpose: the protection of women who are victims of domestic or gender-based violence. This emphasis on simplicity is crucial, as it ensures the app can reach women from all social, economic, and educational backgrounds.

The application's broad reach across diverse social classes, including both affluent and less affluent women, is justified by two key factors. First, gender-based violence is not confined to any specific social class. Second, women from various social strata now have relatively easy access to owning and maintaining a smartphone. It is important to note that public authorities can provide these devices, as well as data plans, to women who cannot afford this cost. Following the application's development, the next section presents the testing methodology, which was the central objective of this study.

ANALYSIS OF THE PROBLEM SITUATION AND PROPOSED INTERVENTIONS

The third stage of the '*Todas Nós, Marias*' application development, the 'Testing and Improvements Stage', included in its second phase ('Conducting Pilot Tests') the testing of the new tool. This testing aimed to verify the application's effectiveness and functionality, as well as to ensure the absence of technological development flaws or procedural errors by the operating personnel. Given that the focus of this study was on simulated tests—which allowed for an analysis of the tool's operation by security forces and its effectiveness in assisting female victims of violence with MPUs—these simulations were conducted with members of the working group, as detailed below.

Ethics in Testing

The testing was conducted with the participation of public security agents, personnel responsible for handling the type of police incidents under analysis, and members of the Working Group involved in the tool's development. These participants were required to have education and training in diverse fields such as Public Security, Psychology, Social Work, Information Technology, and Technical Training in Assisting Women in Vulnerable Situations, among others.

In the testing phase, women in situations of vulnerability or those already holding an Emergency Protective Order were not included, due to the risks to which they could be exposed by potential service failures, as well as the necessary ethical consideration of using real cases and individuals in vulnerable situations. Therefore, the role of women holding an MPU in this testing

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phase was filled by technical agents, whether military police officers or not, in order to evaluate the tool's effectiveness.

Presentation of the Testing

Testers:

- Military Police officers from the *Brigada Militar* assigned to the Operations and Emergency Response Room (dial 190), located at CIOSP;
- Military Police officers from the *Brigada Militar*, members of the Maria da Penha Patrol of the 1st RPMon (Mounted Police Regiment);
- Military Police officers from the *Brigada Militar*, members of the Intelligence Section, with access to the Police Information System—Integrated Queries (SIP);
- Municipal government employees and Military Police officers from the *Brigada Militar*, members of the Working Group for the development of the APP;

Actions:

1- The Working Group first registered "*Training Profiles*" on the application's platform, using agents to simulate the role of women holding MPUs (testers). They also installed the "Todas Nós, Marias" application on these agents' smartphones, instructing them on the technology's functionality and the methodology for testing the tool and the entire Security and Support Network System.

2- The Working Group instructed the Brigada Militar officers assigned to the Operations and Emergency Room of the 1st RPMon on how the tests would be conducted, as well as the dates and times for the testing.

3- The instruction for the testing agents took place at CIOSP for all participants simultaneously, outlining the procedures and presenting the physical infrastructure available at the "*Brigada Militar*" Operations Room for handling this type of incident.

4- The Working Group created a "Testing Actions Monitoring Sheet" (Table 2) for each testing agent, which recorded all data, including activation time, activation location, dispatch time for the police unit, arrival time at the incident/activation location, accuracy level of the smartphone's GPS location, and general observations from the testers, in addition to other data deemed relevant.

5- The testing group was composed of 10 civil servants in order to diversify the evaluation from the perspective of multiple experiences, as well as to test the system with simultaneous activations.

6- On the dates and times defined by the Working Group, the testing agents moved to urban or rural areas of Santa Maria with cellular signal coverage to activate the help button in the "*Todas Nós, Marias*" application.

7- The Military Police officers in the *Brigada Militar* Operations Room were informed that each activation on the specified test dates and times was part of an evaluation. Likewise, the on-duty patrol units dispatched to respond were also informed that it was a testing procedure for a new response tool.

8- Multiple activations were carried out by the testers so that the Working Group could determine the application's effectiveness or the need for corrections in the technology or the procedures adopted by the *Brigada Militar* for the response.

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9- The Working Group evaluated and issued a conclusive opinion on the effectiveness of the application, authorizing the forwarding of the Development Methodology through the Last Stage foreseen, namely, the Application Proposal and its Presentation and Training, and Dissemination and Monitoring phases, but not before suggesting procedures or technologies perceived during the testing of the tool..

10- The Working Group issued a Final Conclusive Report on the Testing Phase, presenting it to the Managers of the Institutions involved in the development and also belonging to the Network for Assistance and Protection of Women, especially the Court of Domestic Violence, which will play a fundamental role in the next stage with the effective registration of women in real situations of risk and with protective orders granted in their favor.

Table 2
Testing Evaluation Sheet Model (to be filled out by the testing agent).

Tester's Name	Activation Time	Activation Location	Dispatch Time for the GUBM ***1**	Arrival Time of the MPFU at the Activation Location	Accuracy of the Activation Location ***2**	Observations

Source: The Author (2022).

***1-** The dispatch time for the Military Police Force Unit (MPFU) refers to the time elapsed from the moment the tester activates the panic button on the application to the moment the military police officer in the *Brigada Militar* Operations Room dispatches the first available vehicle to respond to the incident.

***2-** The testing agent shall record the accuracy of the GPS-marked location using the terms:

EXACT – When there is a complete match between the activation location and the tester's location.

NEAR – When there is a location correspondence of up to 30 meters from the location indicated on the map received by the GuBM from the Operations Room.

DOES NOT MATCH – When the location indicated on the map received by the GuBM from the Operations Room is not the same as the location where the tester activated the Panic Button on the Application.

Description of Testing, Evaluations, and Results

The testing was conducted from March 25, 2022 to March 29, 2022, at multiple times and locations to encompass the diversity of routine situations faced by the operators of the *Brigada Militar* 190 emergency number, as well as to approximate, as closely as possible, the real conditions of police incidents on both weekdays and weekends.

The choice of days and times covered all the characteristics of daily police response. It is evident that this statement considers the ordinary response situation, with incidents regarded as 'normal or routine' for handling in the city's regular vehicle traffic.

Twenty (20) activations by the testers were planned, and all were carried out. Of the activations, only one (1) failed to trigger the alert system in the Brigada Militar operations room at CIOSP. It should be noted, however, that the same tester had previously used the application in the same exercise, and on that occasion, it functioned correctly.

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This finding was forwarded to the software development company for evaluation, and no technological failure was identified in the application or the call reception platform. It is therefore suggested that there was a procedural error on the part of the testing agent or the response team at CIOSP itself. Of the nineteen (19) activations registered at CIOSP, eighteen (18) were therefore pinpointed on the specific terminal as either the 'exact' or a 'near' location of the incident.

In one (1) activation, the location did not match, necessitating a phone call from the operations room to the 'victim-tester' to confirm their location. The suggested location for this test was a rural area of Santa Maria. In this specific test incident, considering the location failure and the need for a phone call to the 'victim-tester' to indicate their position, a time of 51 minutes was recorded from the activation of the panic button until the arrival of the police unit at the 'victim--tester's' location. Obviously, this is an unacceptable amount of time for this type of incident.

On the other hand, however, the fact that the 'victim-tester' was previously registered in the "Todas Nós, Marias" application allowed the Operations Room to make direct contact via a phone call to resolve location doubts, which, in a real situation with the adoption of the application, would, in theory, also result in a more qualified response.

In the other tests conducted, the average time to dispatch a unit for response after the activation of the panic button was one (1) minute, with the average arrival time at the test incident location being 11 minutes and 48 seconds. This average only considered activations where the location was 'exact' or 'near.

Considerations were brought forward by the testers at the end of the exercise, the most significant of which referred to the necessary and constant refreshing of the application platform's page on the specific terminal for activation at CIOSP. This could disrupt the workflow of on-duty personnel and also potentially prevent an activation from generating an audible or on--screen alert. This information was relayed to the developers, who resolved the issue. To clearly the information from the victim and the perpetrator, another suggestion which was implemented is related to change the layout of the screen displaying the MPU data.

In order to analyze the tests and simulations, the working group, which has been active since the application's conception, met to evaluate the results, thereby broadening the spectrum of perceptions on the topic, involving diverse users, and promoting broad interaction among all. All proposed suggestions were recorded and debated by the Working Group, and the appropriate or feasible ones were forwarded to the software developers for analysis and possible implementation.

The conclusive report from the testing reinforced the feasibility of implementing the '*Todas Nós, Marias*' Application, and the final report, submitted to the senior managers of the involved institutions, recommended its adoption.

IMPORTANT FACTORS FOR THE OPERATIONALIZATION OF THE APPLICATION

For the proper operationalization of the application, the involvement of all institutions affected by its use is necessary. Despite the verified success in the engagement of different institutions in building the tool, its effectiveness will only be realized if institutional policies for the protection of female victims of violence are maintained. These policies must consider investment in personnel training, system maintenance costs, and potential infrastructure investments.

The involvement of institutional collaborators, their compliance, and sense of ownership in the construction of a public security action directed at women victims of violence is a fundamental and primary factor, and it precedes any other aspect for the improvement of the issue. Equally fundamental factors, such as the constant technological and infrastructure improvement,

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the expansion of response teams, and advancements in communication, data transmission, and training, are conditioned on the real institutional involvement to be led by the managers or higher councils of each participating institution.

Until the conclusion of the application's development, the institutions positioned themselves as protagonists through an observant and participatory attitude of their collaborators. From now on, it is perceived that there will be a need for an even more effective interaction from the Judiciary, as it will be up to that body to define which women victims of violence will use the new tool. In this regard, the involvement of the Judiciary's civil servants who are designated for such tasks is fundamental.

After the Judge's decision on which woman victim of violence will be covered by the new tool, it will be the judicial servant's responsibility to instruct her, either by downloading the application on her smartphone or by providing her with one owned by the Judiciary. All specific clarifications, training, and support for these judicial employees can initially be provided by the members of the CIOSP Working Group. The complex nature of the issue, the daily challenges in assisting women victims of violence who use the application, as well as the project's expected perpetuity and consistency, demand, in turn, that such institutional interaction becomes a reality.

The fundamental factor, therefore, is institutional collaboration and the political will of managers to implement and promote the initiative. Its operational cost is not significant when considering the social gains of the initiative and the fact that the service infrastructure investments already exist within the *Brigada Militar* emergency response at CIOSP.

In the future, there may be a need for adaptations to new demands, with a consequent investment or resulting cost, as in any other type of public service to the population, but this should certainly not impact the continuity of the initiative.

Tutorials and Descriptions for Application Installation and Operation

For a better understanding of the application's installation and usage, two explanatory tutorials are presented, featuring images and descriptions of the highlighted topics. The first tutorial demonstrates the use of the '*Todas Nós, Marias*' application by the user, who is the woman with a protective order, and the second tutorial demonstrates the application's use by the *Brigada Militar* operations room.

TUTORIAL 1: USE OF THE '*TODAS NÓS, MARIAS*' APPLICATION BY A WOMAN WITH AN URGENT PROTECTIVE ORDER

The "*Todas Nós, Marias*" application is a user-friendly and highly secure tool designed so that women with an Urgent Protective Order granted by a judge can quickly access help from the *Brigada Militar* in case of emergency. The app also allows you to quickly and safely contact someone from your personal network whenever you see fit or feel threatened.

1. Access the Application

After being registered by the Domestic and Family Violence Court against Women, the app user must download the app through the app store, Play Store or Apple Store.

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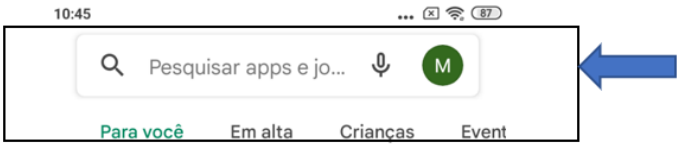
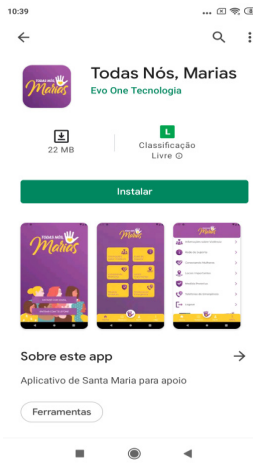
The user opens the Play Store and, in the field that says "Search apps and games," types the name of the application **Todas Nós, Marias.**



After finding the app on the Play Store, click install to download it.



After downloading the application **Todas Nós, Marias**, Find it in the apps on your phone. Click to open the app and access it

Upon clicking on the application, the user will see the home screen, and to access it, the user must log in with their phone number or email address. Remember to ask the Domestic and Family Violence Court about the registration process.

You must click on the field and enter your phone number or email address and the password provided to you by the Domestic and Family Violence Court, then click continue.

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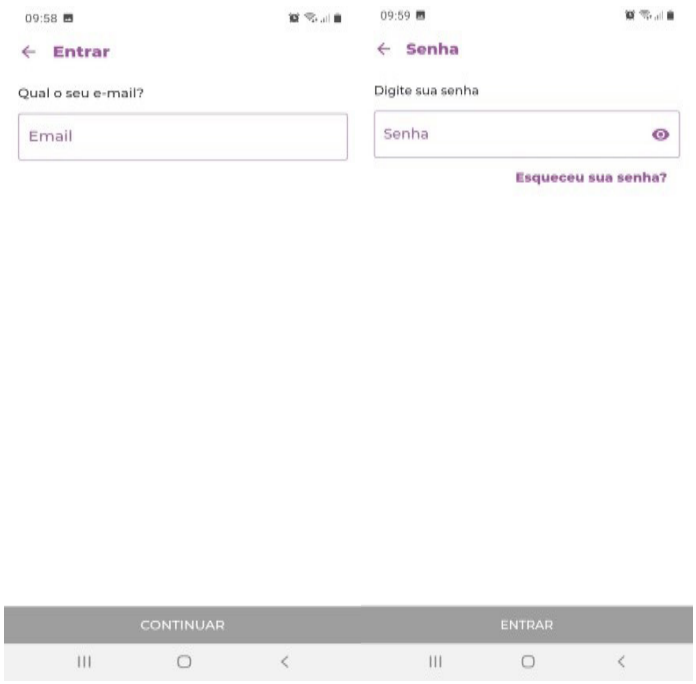
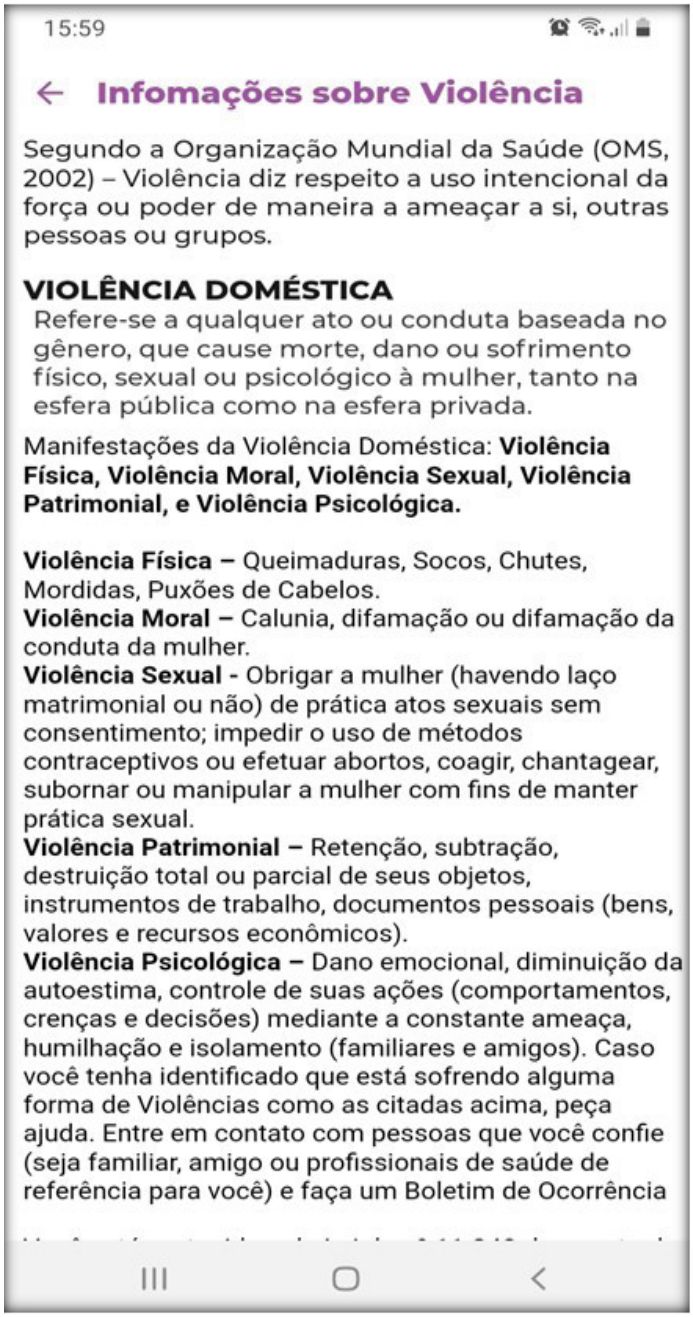


After logging in, the user will see the application's Home Features Screen **Todas Nós, Marias**.

The user will have access to 6 buttons with different functionalities and information. In the "**Information about Violence**" section, she will have access to information about the manifestations of Domestic Violence, so that she is aware of them.



In the **Support Network**, the user can add the phone numbers of 10 people she trusts, whom the Military Police can contact when the Emergency Button is activated. She must click the **Add Contact** button and enter the name and phone number of the person she has chosen.

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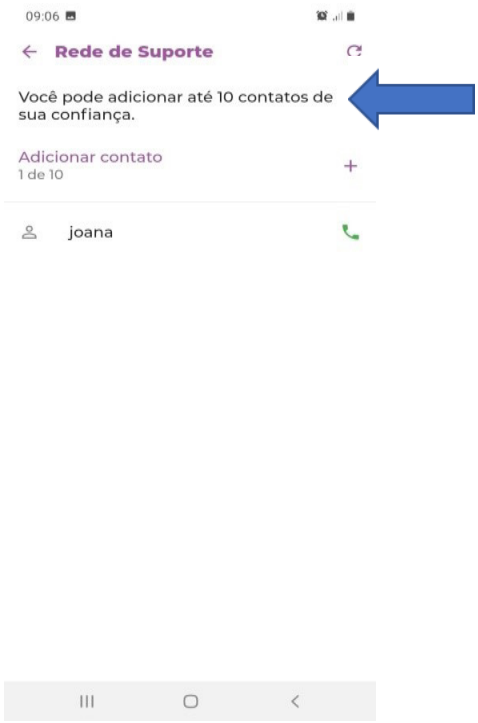
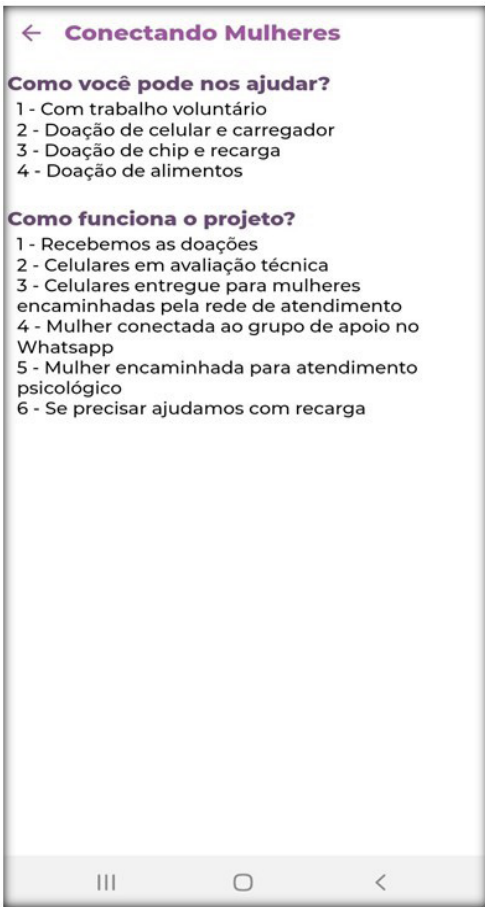
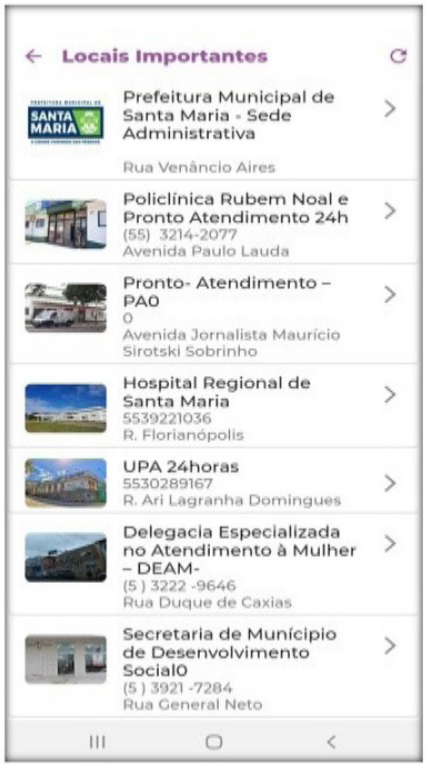


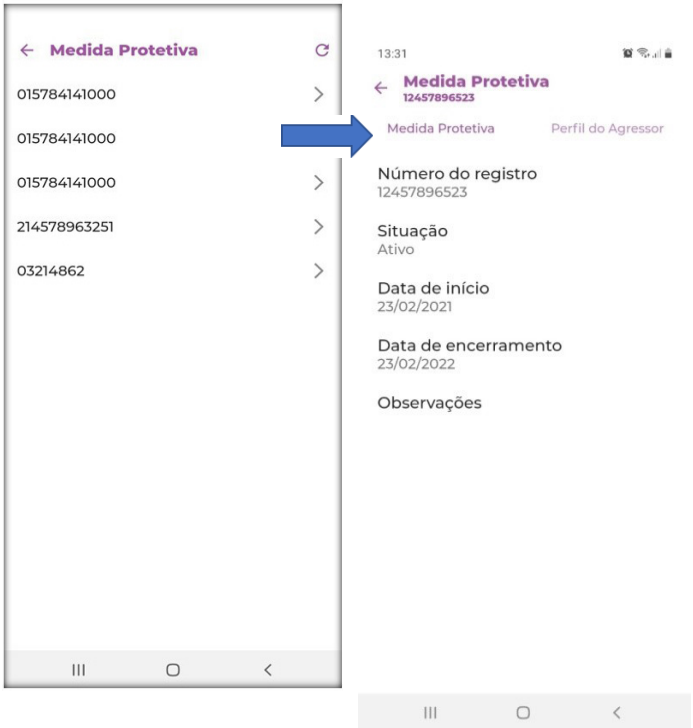
Connecting Women is a project linked to the NGO Women of Brazil that aims to provide access to cell phones and the internet for women who are victims of violence. Through the project, women can participate in support groups for victims of domestic violence, as well as be referred for psychological care.



By clicking the "Important Places" button, you will also have access to the addresses and phone numbers of places that provide services related to health and social well-being, should you need them.



The Protective Measure option will provide the user with information about their active Protective Measure. This is important for staying aware of the validity period of the Protective Measure. To access this information, simply click on the protective measure number to view it.



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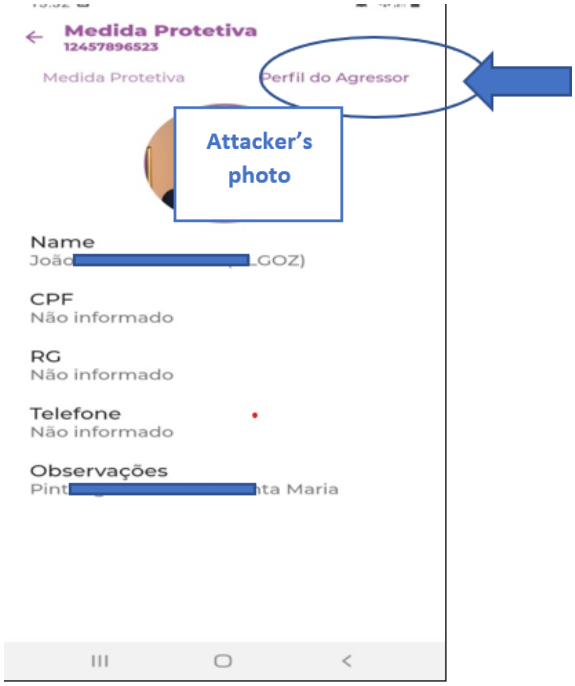
In this option, you will also find information about your abuser by clicking where it says "**Aggressor Profile**".

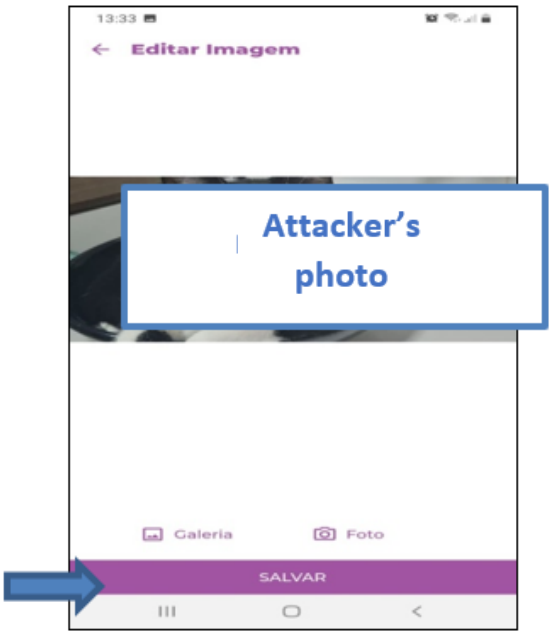


The user may also add more recent photos of their aggressor, which will be very important for the response by the *Brigada Militar*.

- When you click on "Aggressor Profile," information about your aggressor will appear, along with a previously registered photo (when available) entered by the Domestic and Family Violence Court;

- Clicking on the Aggressor's Photo will give you the option to insert a photo from your gallery;

- Select the desired photo and save the change.



By clicking the **Emergency Numbers** button, the woman can call emergency services through the app. Click on the phone number.

Emergency button

The emergency button was developed so that women can report violations of the Protective Measures more quickly. All information regarding their situation has been previously registered by the Domestic and Family Violence Court.

- In dangerous situations, the victim should click on the lilac hand symbol with a yellow heart located in the middle of the application

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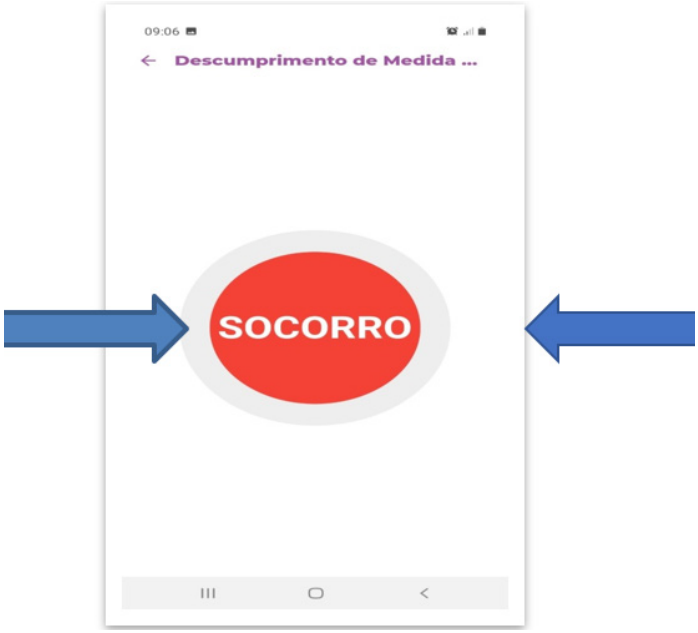
-By clicking on the hand symbol, you will see a red button with the word "Help" written on it. By clicking the button, the user will be sending their real-time location to the Military Police, along with all their information and details about their protective order.



TUTORIAL 2: USE OF THE "*ALL OF US, MARIAS*" APP BY THE *BRIGADA MILITAR* OPERATIONS ROOM

The Military Police will have access to the previously registered information of the woman holding a restraining order in her favor, using the app to provide her with initial assistance in case of non-compliance with the court order.

All data is received through the EvoCities System, via a registration containing a Login and an institutional Password created for the *Brigada Militar*. The military police officer answering the 190 phone line for the *Brigada Militar* will have access to an interface where all urgent protective order violations, triggered by the "Todas Nós, Marias" panic button, will be instantly alerted by a sound indicator in the operations room, displaying that there is a distress call to be attended; this alert will only stop when the officer clicks on the occurrence. Upon viewing the victim's location and all previously registered information, including that of the aggressor—displayed on a dedicated monitor for this purpose—the *Brigada Militar* operator will be able to generate a PDF file with the information and send it to the police patrol team in the vehicle that will respond to the incident.

To access the Evo Cities System, you must open the online address and log in. Access the system through the link https://smmp.evocity.io/login and enter your username and password..

1. Click the box "I'm not a robot"

System Overview

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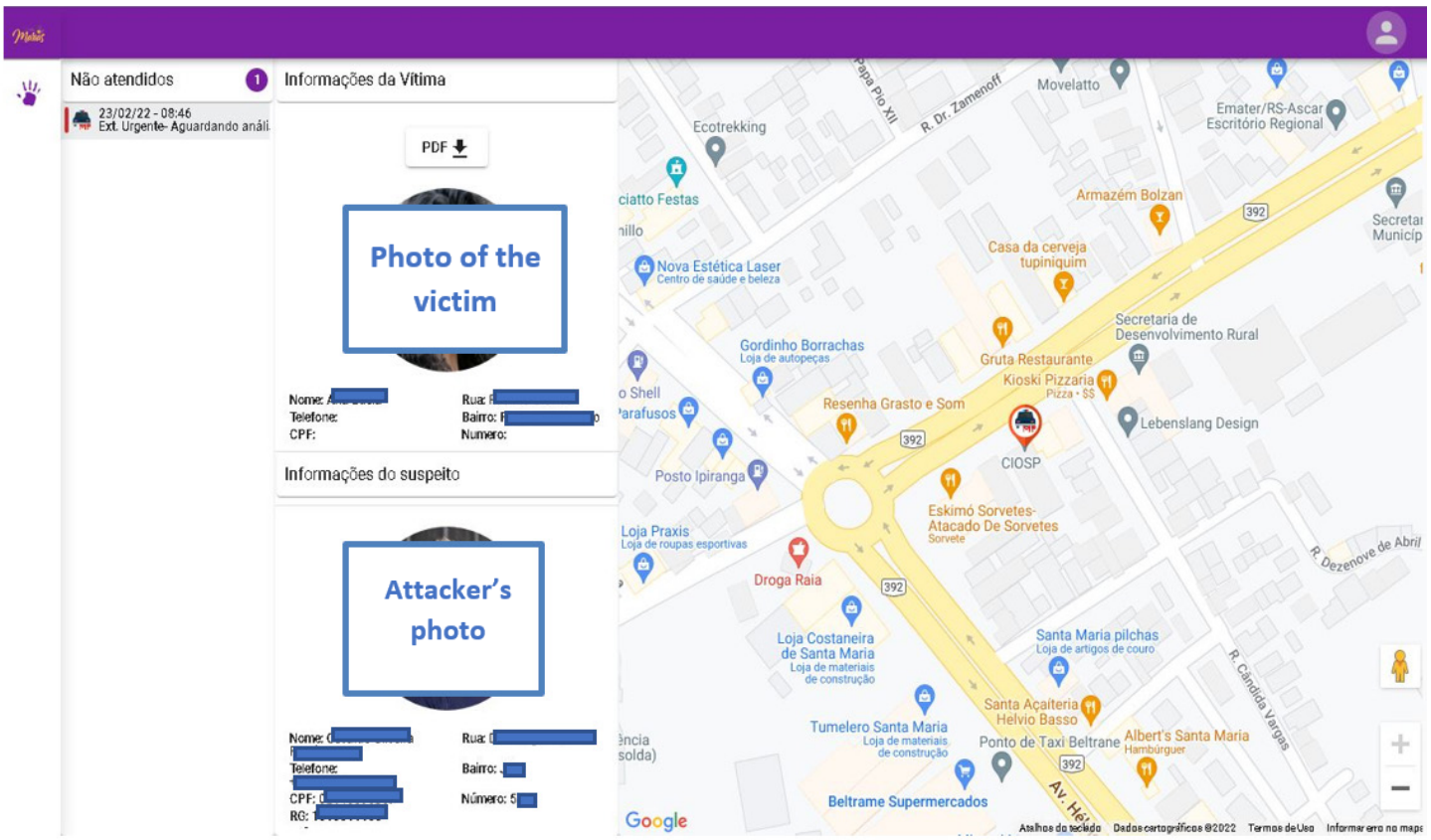
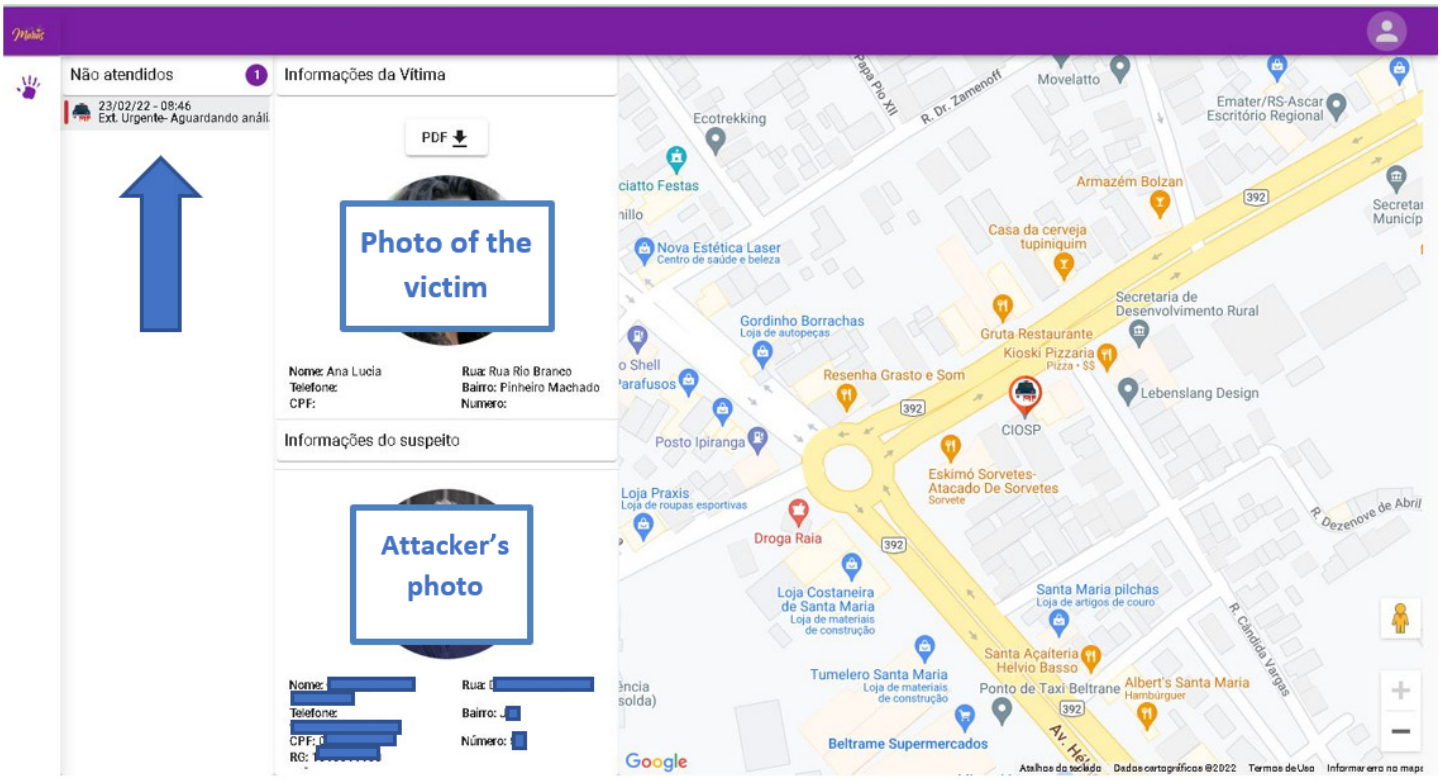


New Incident Report – Victim Information

- Click on the new incident icon to open the Victim and Suspect information



Generate PDF File to Send to Patrol

Click the PDF icon to generate a file to be sent to the patrol unit.

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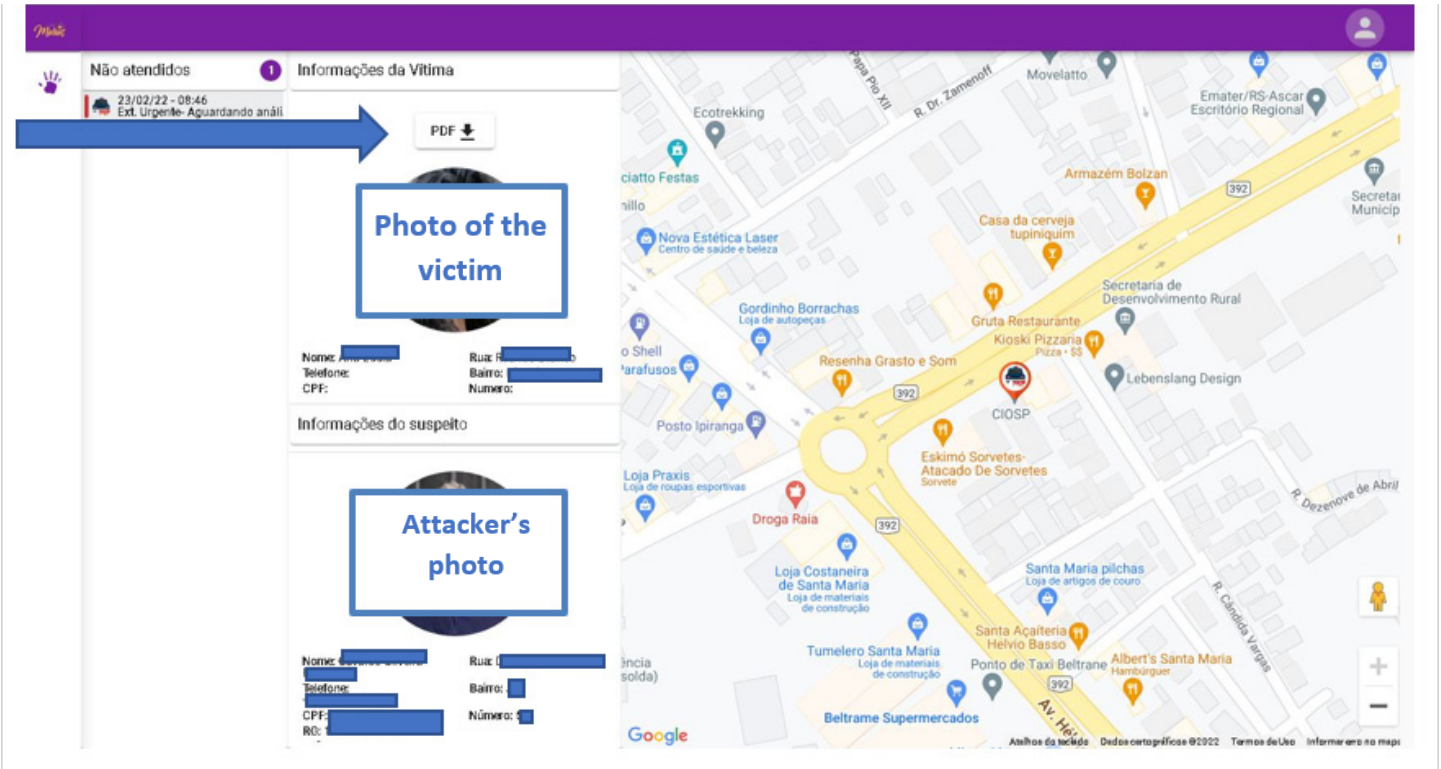

CONCLUSIONS AND TECHNOLOGICAL & SOCIAL CONTRIBUTION

CONCLUSIONS AND TECHNOLOGICAL & SOCIAL CONTRIBUTION

For this study, the existing physical and technological public security infrastructure used by the *Brigada Militar* for emergency police response at the CIOSP in the city of Santa Maria, RS, was utilized, as well as the formation of a Working Group composed of law enforcement professionals and members of the Municipal Government assigned to the CIOSP, all with academic qualifications related to the environment and subject of the study.

The research achieved its objective of analyzing the functionality of a new technological tool to support the protection of women victims of domestic violence, implemented by the *Brigada Militar* in the city of Santa Maria – RS, through simulation processes involving the relevant actors. For this purpose, a working group was formed that participated in every stage of the tool's development and testing. The tests were carried out through simulations with the same teams that work in public security, allowing them to experience various situations when assisting victims of gender-based violence.

The rigor of the tests carried out during the development of the technology aims to address the gap pointed out by Wood, Ross, and Johns (2022), who indicate a lack of discussions about the effectiveness of apps to combat crime, and who also state that rigorous evaluations of such tools are still necessary. The authors highlight the importance of scientific evidence underlying the design of these applications, and this is precisely what this study sought to accomplish.

Wood, Ross, and Johns (2022) highlight that features like geolocation in smartphones have the potential to broaden ways of combating crime, allowing for the transmission of real-time information and messages to help prevent offenses. This is the main characteristic of the '*Todas Nós, Marias*' application. Thus, the present research has shown a promising yet still underexplored field in the development of technology applied to crime prevention, which requires further scientific investigation and practical integration to be truly effective (WOOD; ROSS & JOHNS, 2022).

During the development of the technological tool, factors of utmost importance were identified for both the implementation of the new tool and the operational maintenance of the initiative. In this regard, the need for the allocation of public resources for investment and funding of

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the process stood out. It was observed, however, that since the public security structures are already functioning, investments in technology or physical infrastructure do not negatively impact the maintenance of the action. What should, in fact, have an impact is the necessary institutional involvement of the agencies related to public security, which will necessarily involve the definition of lasting public policies aimed at addressing violence against women, as well as the fostering of a sense of belonging and responsibility regarding the issue among all employees.

Thus, it became clear that it is necessary for the senior managers of institutions to understand that public organizations can and should adopt practices that innovate and improve the provision of their services, bringing security, cost-effectiveness, and problem-solving capacity to their actions. In this way, the tool presented aims to offer a practical solution, effectively tested and feasible from both legal and economic perspectives at public expense.

What was sought was the resolution of a social and technical problem, based on the involvement of those who deal with the problematic situation using already well-established traditional tools. These tools, in most cases, yield results that are already known, often falling short of what is expected or ideal. The initiative proposed in this work, on the other hand, represents an advance that can be made in confronting violence against women, as it is the result of intertwining professional expertise in addressing social demands, technical skills, and the academic knowledge of the participants, all through the practice of the proposed research methodology. Thus, a key practical contribution observed is the improvement in assistance to victims of gender-based violence, since it will allow for more assertive action, as the police patrol will receive in real time information from the Urgent Protective Order (MPU), having knowledge of both the victim and the aggressor. Furthermore, it is expected that the application will enable a reduction in response times to emergencies. Based on these outcomes, among the social contributions highlighted are the reduction of cases and the expansion of the support network for victims of gender-based violence, through the joint action of the various institutions that make up public security.

The applicability of the initiative was envisioned upon analyzing the results from the testing phase of the new tool, with no further tests required for its application, except for constant monitoring and occasional adaptation to new situations that may arise in the daily actions of protection for women victims of violence.

The study faced limitations related to institutional awareness about the severity of the problem of violence against women. It was observed that, apart from the specialized groups or those specifically dedicated to addressing the issue, as well as individuals involved in already established official initiatives, there is little awareness regarding the seriousness of the reality to be confronted, demonstrating the need for ongoing efforts to raise the topic and engage everyone with the issue. Additionally, during the development of tests and simulations, it was not possible to include victims of violence, since any possible errors could increase risks and vulnerabilities, which can be considered a limitation of the study.

As suggestions for future studies, once the tool has been effectively adopted, it would be beneficial to carry out case monitoring of situations in which the tool was triggered, conduct statistical analyses of the evolution or worsening of the types of violence, as well as potentially perform qualitative analyses of the incidents attended to as a result of the police activation through the application. From the results of such studies, if conducted, new questions may arise, leading to further research on the subject. It is important to highlight that the '*Todas Nós, Marias*' application proposed in this work is relevant to the fields of Public Administration, Law, Public Security, and Information Technology. In Public Administration, the application contributes to the improvement of services provided to women victims of domestic violence, facilitating access to protective measures and expediting emergency response.

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