

# Improving Information System Usability for Child Protection in Colombia

## Overview of Methodology



August 2023

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**Andrea Navarrete<sup>1,2</sup>, Allison Connolly<sup>1,2</sup>**

<sup>1</sup> Data for Impact <sup>2</sup> Palladium International

### **Data for Impact**

University of North Carolina at Chapel Hill  
123 West Franklin Street, Suite 330  
Chapel Hill, NC 27516 USA  
Phone: 445-919-6949  
D4I@unc.edu  
<http://www.data4impactproject.org>

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Cover photo: ICBF working with children in La Guajira Department. Photo credit: ICBF

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## Abbreviations

D4I	Data for Impact
DIT	Information and Technology Directorate
ICBF	Colombian Institute for Family Welfare
PARD	Administrative Process to Restore Rights
SIM	Sistema de Información Misional
SRD	Subdirectorate for Rights Restoration
USAID	United States Agency for International Development

## Purpose of Report

This report describes the methodology used by the Data for Impact (D4I) project to assist the Colombian Institute for Family Welfare (ICBF) in Colombia to improve the usability of the Sistema de Información Misional (SIM), an operational information system. Specifically, the report describes how the D4I project guided the ICBF to identify the most important end user needs to manage child protection cases in SIM, devise solutions and validate them with end users, and create the associated technical documentation.

This document is primarily intended as a resource for the ICBF to use in its future work rather than a report on the results of each phase of the process, which has been provided elsewhere.

## Background

ICBF's primary strategic objective is to promote the rights<sup>1</sup> of children and adolescents and prevent risks to those rights. In 2020, the United States Agency for International (USAID) contacted the Office of External

**Figure 1. Children at a zonal center**



Photo credit: ICBF

Cooperation at ICBF to offer assistance through the D4I project to improve SIM. SIM is a proprietary system that first went live in 2010. As of 2021, it had over 8,000 users. It is not exclusively a child protection information system as it is used by numerous other programs at ICBF. Nevertheless, the module for child protection, known as the Beneficiary Module, is the largest in SIM. This module has 14 sections (e.g., Demographic Information and Initial Evaluation; Nutritional Assessment).

Because this was a new area of USAID support to ICBF and since D4I was working for the first time at the institute, USAID recommended that D4I start by exploring the best ways it could assist ICBF to

manage their child protection cases using SIM. ICBF agreed with this approach, and in January 2021, the Subdirectorate for Rights Restoration (SRD) in the Protection Directorate became the home of D4I's activities.

In addition to a desk review, D4I conducted 25 key informant interviews with individuals and groups (26 women and 12 men) and 5 follow up interviews. The interviews included participants at zonal, regional, and national levels who represented six directorates at ICBF. Two contracted service providers also participated. The findings from the interviews were wide ranging and helped determine D4I's overall workplan. The most pertinent results for the activities described in this report were:

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<sup>1</sup>This term refers to the specific legal protections and guarantees accorded to children and adolescents to ensure their development and wellbeing. The rights of children and adolescents recognized by the Colombian State are set out in the Code of Childhood and Adolescence, enacted by Law 1,098 of 2006 (ICBF, 2006).

- Frontline workers at ICBF, who are members of *defensoría* teams,<sup>2</sup> couldn't fully manage their jobs in SIM. Some of the data they needed were not captured, key functionalities such as printing of forms and letters was unavailable, and the organization of the fields and the screens was inconsistent with their work processes as well as the paper forms required for service providers and the judicial system.
- There were shortcomings in the governance of SIM.
  - Input from end users in decision making was not adequately prioritized. Furthermore, there was no user group to provide input on usability concerns, articulate the ongoing changes needed to keep up with programmatic and policy changes related to child protection, and review and approve the proposed changes to the system.
  - Because there are sometimes long delays in making updates to SIM, staff knowingly entered incorrect data for extended periods, causing additional complications such as the need for manual corrections to data reports.

After D4I presented all of the findings from the interviews to USAID and ICBF in July 2021, the three entities agreed on the focus of work for the remaining two years of the project. With respect to SIM, ICBF requested that D4I focus on enhancing the usability of the Beneficiary Module by improving its design. Per the request of ICBF, D4I would provide the necessary documentation and ICBF would program the changes in SIM.

D4I advised that, in order to move forward with specific improvements, the recommended first step was to gather more detailed information about the data collection and usability concerns from a much larger representation of end users (and those who closely supported them). ICBF recognized the merits of this approach. The following section describes these steps along with the methodology used in other phases of the project.

## Methodology

### Overview

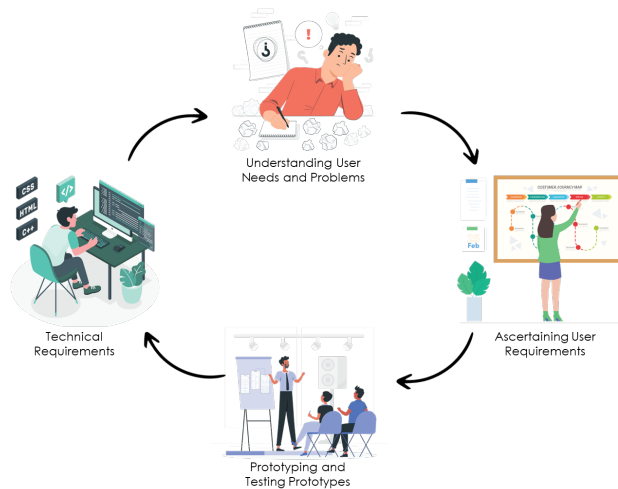
The methodology used to enhance the usability of the SIM Beneficiary Module was based on the principles of design thinking, a user-centered approach that promotes empathy, creativity, and iteration to tackle complex problems (Siang, n.d.).

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<sup>2</sup> *Defensoría* teams work in ICBF's 215 zonal offices. Each team is typically comprised of a nutritionist, a social worker, a psychologist and a lawyer, who leads the team. The lawyer is known as the "*defensor*."



**Figure 2. Methodology for enhancing SIM usability**



Source: D4I

## Understanding User Needs and Problems

D4I proposed a mixed methods approach to learn more about the data collection and usability concerns faced by end users. The first step would be an online survey, followed by focus groups. These methods are often coupled since they have complementary strengths and weaknesses. For example, a survey facilitates gathering standardized input from many people, and the option of anonymity may engender more frank responses than methods involving personal interaction such as focus groups. SRD reported that they had never used these methods to ask about user needs and were very interested in trying them.

### Online Survey

D4I and ICBF collaborated to develop the survey, which inquired about usability of the Beneficiary Module to document and manage child protection cases. In addition to numerous questions that pertained to the usability of the entire module, ICBF identified seven of its 14 sections for deeper inquiry:

- Demographic information and initial evaluation
- Social and family information
- Record of legal and administrative actions
- Nutritional assessment
- Psychological assessment
- Integrated assessment

The methodology consisted of four phases that facilitated the collaborative development of improvements aimed at enhancing users' experience with SIM:

1. Understanding user problems
2. Ascertaining user requirements
3. Prototyping and testing prototypes
4. Developing technical requirements

The following sections discuss in detail the implementation of each phase of this methodology, including the tools and methods used and the main results achieved from each phase.

- Administrative Process to Restore Rights (PARD)<sup>3</sup>

For each of these sections, the survey asked about specific usability needs such as:

- Modifying questions and answer options (e.g., adding, deleting, changing formats).
- Improving navigation (e.g., rearranging the fields on the screens to better match the way work is done; improving the pathways between screens).
- Condense the number of screens.

The survey was targeted toward *defensoría* teams and their data entry assistants. A secondary target group was the SIM Leaders, who work at the regional level to assist end users and managers with using the system and its data. Each survey topic had questions with structured response options followed by optional open-text fields allowing respondents to provide additional input. After piloting the survey with a small cross-section of professionals, it was deployed using SurveyMonkey. SRD distributed it to 600 people in April 2022 using existing group email lists.

A total of 172 respondents in the target groups responded to the survey, 90 percent of whom worked in a zonal office.<sup>4</sup> The optional qualitative questions generally had high rates of response and provided rich information. The subsequent two paragraphs provide important high-level findings; it is beyond the scope of this report to fully summarize the results.

In terms of usability of the entire Beneficiary Module, navigation difficulties stood out as the most important issue to be addressed. Above all, the problems stemmed from needing too many steps to arrive at the required screen, the splitting up of similar data entry fields across multiple screens, and the placement of certain fields on the incorrect screens. The need for print templates was also salient in the findings, most notably for the various sections related to assessments (psychological, etc.), but also the stages of PAR.

The results about usability needs in the seven highlighted sections of the module were remarkably consistent. For each of the seven sections, a majority of respondents indicated that it was important or very important to address all the usability needs asked about in the survey. The Social and Family Assessment section was viewed slightly more favorably than the others. The Nutritional Evaluation section was viewed the least favorably, with 81 percent of nutritionists expressing that it was important or very important to address all five of the usability needs relevant to this section.

## Focus Groups

The focus groups were planned to take place after the survey to provide the opportunity to clarify or deepen the understanding of those results. Three focus groups were facilitated remotely by D4I in April and June 2022. Each lasted 75-90 minutes and had 4 to 6 participants. Two groups consisted of members of *defensoría* teams, and the third group involved SIM leaders.

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<sup>3</sup> The process begins with the “*defensor*” determining whether rights are being upheld or threatened, violated or otherwise disregarded, based on the assessments (psychological, nutritional, social work, etc.) performed by the *defensoría* team. In cases where *defensores* find that a right is being disregarded, threatened, or violated, they can launch a PAR, roughly a 10-step process comprised of administrative and legal actions that must be taken to restore the rights of children and adolescents as dictated by the specific characteristics of each case (ICBF, 2016).

<sup>4</sup> Because the survey was unintentionally distributed to some staff who were not in the target groups, D4I could only provide an approximate participation rate (35-40%).

Overall, the results of the focus groups were very consistent with those for the online survey. Significant difficulty with navigation was cited throughout the entire module. Like survey respondents, participants emphasized the need for more templates, but also stated the need for improved formatting of current templates and the ability to edit them. Facilitators asked about which of the seven sections of the Beneficiary Module should be prioritized for redesign. Consistent with the survey results, respondents remarked that all of them needed attention, but the Nutritional Assessment section was noted to be particularly problematic due to navigation issues and the format of responses. Finally, participants cited many obstacles for users to correct their errors in SIM. Sometimes, this caused them to invent ways to get around the error, which resulted in inaccurate data entry. (The ability to correct errors was not asked about in the online survey.)

## Presenting Results and Determining Next Steps

The results of the survey and focus groups were presented orally to ICBF staff in May 2023. Due to the amount of difficulty expressed by participants in the survey and focus groups, D4I recommended focusing the redesign on specific sections rather than the entire Beneficiary Module. D4I believed that a comprehensive approach to section redesign was required; instead of using the existing screens as a basis for redesign, D4I proposed determining the needs independent of the existing user interface, using input from a diverse group of end users. Since the estimated time commitment from D4I and the key staff at ICBF involved in the work was significant, the project determined that it was feasible to redesign four sections of the Beneficiary Module.

After gaining USAID's approval for this approach, D4I sought the endorsement of ICBF. While ICBF had hoped to redesign the entire module, they acknowledged the extensiveness of the issues cited in the inquiries and were eager to try out new approaches to improving usability. Therefore, the ICBF accepted D4I's proposal and informed them in June 2022 that it wished to focus on these four sections of the Beneficiary Module: Demographic Information and Initial Evaluation, Verification of Rights and PARD, Nutritional Assessment, and Record of Legal and Administrative Actions. It was also agreed that the ICBF would select staff for a user group who would participate in workshops over the following year to address usability issues for all four of the selected sections.

In July 2022, ICBF selected 15 SIM users (11 women and 4 men) from *defensoría teams* and regional offices throughout the country, as well as national experts, to form an interdisciplinary user group. The group was diverse in terms of the professional roles represented (e.g., *defensores* (2), psychologists (2), social workers (2), nutritionists (3), SIM Leaders (3), and advisers (3) from the Protection Directorate). The members of the group would bring diverse perspectives to help ensure the applicability of the recommendations to end users of the system.

After the members of the user group confirmed their participation, D4I and ICBF scheduled seven workshops, which were held between August 2022 and July 2023. Over the course of the workshops, the users were engaged in several activities to implement the next three phases of the methodology: ascertaining user requirements; prototyping and testing prototypes; and developing technical requirements.

To foster a comprehensive view of the methodology and generate meaningful buy-in among the users, D4I and ICBF agreed to address the sections one by one. To that end, the Demographic Information and Initial Evaluation section underwent all phases of the methodology first, followed by the Verification of Rights and PARD, Nutritional Assessment, and, lastly, Record of Legal and Administrative Actions sections.

## Observation of Frontline Staff Using SIM in Zonal Centers

The final step to understand users' needs and problems took place after the four sections had been chosen for redesign. Prior to facilitating the workshops, D4I deemed it essential to see the work environment in which *defensoría* teams used SIM and how they incorporated the system into their daily workflows. Between September and November 2022, D4I and staff from SRD conducted visits to three zonal centers, which were chosen based on geographic proximity to ICBF's national headquarters in Bogotá and the number of people on the *defensoría* team in the office.

The visits revealed that, to carry out their work effectively, the *defensoría* teams relied on additional tools beyond SIM such as Excel and custom Word templates. Furthermore, some functionalities of the system were inconsistent with the workflows at the zonal centers. For instance, there were mandatory fields that could not always be completed based on the information in the documents obtained during the initial meeting with the child and their family. Moreover, the system would time out before the users were able to collect and enter all the data from this initial meeting, resulting in the data being lost. Other issues were related to navigation, organization of the screens, and response options.

## Lessons Learned and Key Recommendations from Methods to Understand User Needs and Problems

- Each of the methods used (focus groups, survey, and on-site visits) has unique strengths, in terms of the number of participants that can easily be reached, the depth of the information that can be collected, and the ability to ask follow-up questions. D4I recommends using a mix of methods, including those that offer anonymity to participants.
- Conducting the activities in series (rather than in parallel) was ideal because it allowed each inquiry to be informed by the results of the previous methods. If gaps in understanding were noted or more specific information was needed, this could be addressed in a subsequent inquiry.
- In spite of the follow-up efforts of SRD staff, the focus groups were the only method for which participation was challenging. It is possible that conducting the groups remotely decreased the motivation to participate. To ensure participation is adequate, consider inviting several more people to a session than needed. Focus groups should be facilitated by someone who is familiar with SIM, but to gather unbiased results, the selected individual should not support users directly with the application. The confidentiality of participants' opinions should be protected when results are reported.
- The visits to the zonal centers provided inputs to the process that could only be obtained by observing SIM used in a real-world setting. System design should be informed by the environment in which it is used. Witnessing how the system supported day-to-day work significantly helped D4I to plan the workshops and guide the discussions.

## Ascertaining User Requirements

The first workshop with the user group was held in August 2022. The two-day, in-person workshop had two main objectives: (1) train participants in the core concepts of usability and prototyping, including Jakob Nielsen's usability principles<sup>5</sup> and the principles of design thinking; and (2) engage users in a participatory

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<sup>5</sup> Jakob Nielsen's usability principles are a set of 10 principles used to create products that are more widely adopted by users because they are based on user needs. (Nielsen, 1994)

process to ascertain the user requirements for the Demographic Information and Initial Evaluation section.

A half day of the workshop was set aside for training, which used a methodological approach grounded in gamification as a tool for experiential learning. First, workshop participants filled out a questionnaire on the core concepts of usability using Kahoot!, which facilitated virtual, real-time interactions among all participants using their mobile phones. This was followed by an activity to put what participants learned into action.




For the next day and a half, the training focused on implementation of the second phase of the methodology, “ascertaining user requirements,” for the Demographic Information and Initial Evaluation section. The main objective of this phase was to encourage users to reflect on their needs holistically instead of focusing solely on specific changes to the information system. To achieve this objective and determine the user requirements through a participatory process, the workshop used tools such as the “customer journey map” and “user stories,” discussed below. Additionally, findings from the survey and focus groups about the main problems experienced by users and the lessons learned from visits to zonal centers were presented as inputs for these activities.

### Customer Journey Map

Once users were trained on the core concepts of usability, the next step was a participatory exercise to build the “customer journey map.” This map is a tool that gives users the opportunity to tell the design team how they currently work by mapping out each stage of their work, the tasks they carry out at each stage, the frustration or satisfaction they feel when carrying out each task, and the time that they need to complete those tasks in SIM (Yasar, n.d.). Maps also include tools other than SIM used to complete their work, which helps reveal the need for new fields or features not currently available in SIM.

An example of the template for a customer journey map is presented below:

**Figure 3. Sample customer journey map template**

Customer Journey Map Demographics and Initial Evaluation Section				
	Document review	Beneficiary registration	Education	Health and health insurance.
Tasks				
Duration				
Engaging points 				
Satisfactory points 				
Pain points 				
Other tools				

The method used to conduct the customer journey map at the workshop consisted of the following steps:

1. In groups of no more than five, users explained to one another in detail how they carry out their daily tasks, as well as the goals they wish to accomplish when they interact with the Demographic Information and Initial Evaluation section.
2. Participants used an instance of SIM that had been created by ICBF exclusively for training and practice.<sup>6</sup> This allowed them to work with records of fictitious children, adolescents, and families that had been created by the Protection Directorate team for the workshop. The purpose of this exercise was to help users recall the tasks they must perform when collecting and inputting data and creating reports, while encouraging them to reflect on these points:
  - Engaging or satisfactory points when carrying out the tasks
  - Problems they faced when carrying out the tasks
  - Tools they use in addition to SIM to carry out the tasks
3. Each group discussed these points among themselves and jotted down their agreements for each section of the user experience map on sticky notes. Afterward, each group affixed their sticky notes on the customer experience map template.
4. All participants came together to form a consensus on the points identified by each group.

The process culminated with all participants collaborating to build a single customer journey map depicting how users currently perform their work and their experience with the Demographic Information and Initial Evaluation section.

**Figure 4. Members of the user group building a customer journey map**



Photo credit: D4I

<sup>6</sup> This instance was used during the workshops. Actions performed on the instance do not affect actual user records or the operations of the system used by ICBF professionals in their daily work.

## User Stories

Based on the problems or pain points identified when building the customer journey map for the Demographic Information and Initial Evaluation section, the “user stories” exercise was used to suggest potential changes to enhance its usability. User stories are brief descriptions of what users want to be able to do in the system and how this could be achieved. Through these stories, users tell the designers how they would like to carry out their work, which helps the designers prioritize decisions and keep users at the center of the design process.

User stories typically follow the format of a single sentence expressed from the user’s perspective: “**As a** [type of user], **I want** [goal], **to achieve** [benefit].” One example of a story for the Demographic Information and Initial Evaluation section is:

“**As a** professional on a *defensoría* team, **I want** all of the data that I have to enter on the Demographic Information and Initial Evaluation section as part of the initial registration of a child or adolescent to be consolidated in a single place, **so** I will not have to memorize the screens that I have to access to input this information.”

The method used to conduct the user stories exercise at the workshop consisted of the following steps:

1. Each group performed an ideation exercise to creatively tackle the problem points identified when building the customer journey map for the Demographic Information and Initial Evaluation section and suggest potential changes in the system.
2. Users expressed those ideas in user stories using the forms provided, following the typical user story structure.
3. All participants came together in a discussion to form a consensus on the user stories and add more detail to the user needs and recommended changes. The objective of this step was to ensure that the user stories would be able to guide design decisions during the prototyping phase.
4. Users prioritized the user stories using the Kano model (Holst, 2012). This technique made it possible to categorize user stories by their impact on user satisfaction in terms of SIM usability and functionality. As a result, participants could determine which changes were of low priority and could be excluded from further consideration.
5. After the workshop, the user stories were sent to the Protection Directorate team for feedback. This team vetted the viability of the user stories with other departments, including the Planning Directorate, the Public Services and Assistance Office, the Administrative Authorities Liaison Office, the Subdirectorate for Juvenile Justice, the Adoptions Department, and the Information and Technology Directorate (DIT). The Protection Directorate’s comments helped fine-tune the user stories, which were used as inputs for the prototyping phase.



**Figure 5. Members of the user group developing user stories**



Photo credit: D4I

## Summary of Results

The customer journey map and user story exercises were replicated for the other SIM sections at the workshops on Verification of Rights and PARD in September 2022, Nutritional Assessment in November 2022, and Record of Legal and Administrative Actions in June 2023.

A total of four customer journey maps were created. These maps guided the development of 178 user stories for the four sections, broken down as follows: Demographic Information and Initial Evaluation (27%), Verification of Rights and PARD (25%), Nutritional Assessment (38%), and Record of Legal and

Administrative Actions (10%). Notable findings included:

- The proposed changes for the first two sections focused on revamping the navigation structure and consolidating the fields that users must fill out on a single screen divided into tabs. Participants also recommended modifications to the response options and the arrangement of the fields.
- The Nutritional Assessment section had recently undergone a major update that resulted in a user-friendly navigation structure. For that reason, the changes recommended focused on activating or deactivating functions (e.g., editing, printing) and fields according to how users responded to questions.
- For the Record of Legal and Administrative Actions section, changes focused on eliminating certain fields and adjusting the format and function of others.

The user stories played a key role in ascertaining requirements, serving as a bridge between the user requirements, and the solutions for system design.

## Lessons Learned

- The information gathered from the interviews, focus groups, surveys, and visits to zonal centers as well as the workshops was essential in achieving the stated objectives. All these inputs were crucial for the Protection Directorate and D4I team to understand the day-to-day user interactions with SIM and the challenges users face.
- The user stories helped tackle the identified pain points. This meant that the users did not have to redesign the screens for each of the four sections and ensured that the design remained focused on relevant features. Each proposed change had a clear purpose that was aligned with user needs.
- User stories should evolve as user needs and expectations are better understood. The Protection Directorate team played a key role in reviewing and validating the user stories after the workshops.
- Users gradually became more adept at the methodology. The first workshop required more time so users could familiarize themselves with creating customer journey maps and detailed user stories;



the increased pace of subsequent workshops demonstrated their increasing understanding of the methods.

## Prototyping and Testing Prototypes

After the user stories were approved by the Protection Directorate team, prototyping and testing began. This phase sought to translate the user stories into interactive designs and provide users with the opportunity to test the proposed changes and identify needed improvements.

This section describes the methodology used to transform the user stories into interactive prototypes and test the prototypes with the same group of users who developed the user stories.

## Prototyping

Prototyping aims to transform user stories into tangible features in the final product. An interactive prototype is a streamlined and operational version of an information system that allows users to see how it will look and function once the changes are developed in the actual system.

To give users an opportunity to experiment with fields and test out changes in the navigation between screens, an interactive prototype was developed using the user stories approved for the Demographic Information and Initial Evaluation section. D4I used Adobe XD, a robust prototyping tool that offers a variety of design features and the ability to simulate the interactions with the user interface (Adobe, 2023). Other important aspects of Adobe XD include its ease of use and the ability to easily share links to prototypes with users and developers so they can provide their comments. This feature is extremely useful to document feedback.

Below is the interface for the prototype of the Demographic Information and Initial Evaluation section.

**Figure 6. Interactive prototype for the Demographic Information and Initial Evaluation section**

The screenshot displays a web-based interactive prototype for a system titled "SIM - Sistema de Información Misional". The interface is divided into three main sections: a left sidebar, a top header, and a central content area.

- Left Sidebar:** Contains a list of navigation options under the heading "Atención al Ciudadano". These include "Beneficiarios" (with sub-items like "Mis Peticiones Pendientes", "Administrar Petición", "Información del Beneficiario", "Asignaciones", "Valoración Beneficiarios", "Situación de Emergencia", "Información Complementaria Beneficiario", "Administrar Historia Beneficiario", "Parámetros", "Reportes", and "Actualización Fecha Petición"), "Actuaciones", "Adopciones", "Pruebas Genéticas", "Unidades De Servicio", "Metas Sociales y Financieras", "Seguimiento Planes, Programas y Proyectos", "Profesionales", "Capacitación", "Generales", "Desvinculados", "Responsabilidad Penal para Adolescentes", "Programa Especializado de Inclusión Familiar", "Registro Único de Beneficiarios", "Mi País", "Atención a Víctimas", "Comisarias", and "Consultas BD Externas".
- Top Header:** Shows the breadcrumb "INICIO > Usuario > Información del Usuario" and a search bar labeled "Ir a...".
- Central Content Area:** Titled "INFORMACIÓN DEL USUARIO", it contains several input fields and buttons.
  - Fields: "NÚMERO DE PETICIÓN" (12345), "SUCURSAL DIRECCIONADO" (Abc), "ÚLTIMO PROFESIONAL DIRECCIONADO" (Abc), and "AUTORIDAD COMPETENTE" (Abc).
  - Buttons: "PETICIONES ASOCIADAS AL BENEFICIARIO" and "HISTORIAL DE ACTUACIONES".
  - User Profile Section: Features a circular profile picture of a young girl, the name "Stacey Roswells", and the age "6 Años".
  - Form Fields: "Tipo de documento" (XXXXXXX), "Número de documento" (XXXXXXX), "Sexo" (XXXXXXX), "Género" (XXXXXXX) with a note "(Como se autoreconoce)", "Orientación sexual" (XXXXXXX), "Fecha de creación" (11/11/11), "Sucursal de creación" (Abc), "Fecha de nacimiento" (XXXXXXX), "Nacionalidad" (XXXXXXX), "¿Otra nacionalidad?" (radio buttons for Si and No), "Estado civil" (XXXXXXX), and "Observaciones" (XXXXXXX).
  - Bottom Section: A row of tabs labeled "INFORMACIÓN COMPLEMENTARIA", "CARACTERIZACIÓN", "ESTADO DE SALUD Y SEGURIDAD SOCIAL", "ESCOLARIDAD", and "VALIDACIÓN REGISTRO DE INFORMACIÓN".

Source: D4I

## User Testing Workshops

The workshop to test the prototype for the Demographic Information and Initial Evaluation section was held in December 2022. This event was intended to give end users an opportunity to test out the designs. For that reason, the workshop focused on experimenting with the prototype to verify that the proposed changes met user expectations and developing solutions for any design limitations that were identified.

The method used at the workshop consisted of these steps:

1. In groups of no more than five, users reviewed the prototype guided by a series of tasks; each task had instructions for the actions that users should perform to test the proposed changes. The tasks were developed from the user stories. (Appendix A – Example of a task for users to test prototypes).
2. Throughout the review process, users provided feedback on the prototype using the comments feature in Adobe XD.
3. All participants came together in a plenary discussion to form a consensus on solutions to the design deficiencies that were identified. Users agreed on the changes to the prototype design and functionality, which resulted in a single prototype endorsed by everyone. An exercise was also done to identify the changes that would have the greatest impact on system usability and functionality.
4. After the workshop, the changes were incorporated into the prototype, and it was submitted to the Protection Directorate for feedback. The Protection Directorate team validated the proposed changes with the other offices, especially DIT, to ensure that they were viable.

This iterative method made it possible to refine the proposed redesign of the Demographic Information and Initial Evaluation section. This reduced the risk that the changes would not meet expectations and ensured that the new design would be truly focused on user needs.

## Summary of Results

This phase of the methodology was replicated for the other sections at the workshops on Verification of Rights and PARD in December 2022, Nutritional Assessment in April 2023, and Record of Legal and Administrative Actions in July 2023.

A total of four prototypes were developed and tested, one for each section (Appendix B – Links to interactive prototypes). The following results are highlighted:

- The prototypes for the Demographic Information and Initial Evaluation and the Verification of Rights and PARD sections required more time for development and testing because the navigation

**Figure 7. Members of the user group testing out the prototypes**



Photo credit: D4I

structure for these two sections was overhauled. Additionally, full screens were restructured, and new features were added.

- The prototype designed for the Nutritional Assessment section required the least development time because no changes were made to its navigation structure. The biggest challenge in this section was due to the need to design for several types of beneficiaries since the fields that appear depend heavily on the characteristics and conditions of the children and adolescents in question, such as their age, gender, and disability status.
- The Record of Legal and Administrative Actions prototype was much easier to design and test, mainly due to the low number of screens and the fact that the users had a deep understanding of the methodology by the time they reviewed this fourth and final prototype.

## Lessons Learned

- To avoid overloading reviewers with too much information, prototypes should focus on conveying key functions and major interactions, not superficial details.
- Using interactive prototypes in Adobe XD made it possible to realistically simulate the user's experience interacting with SIM. This allowed users to explore the screens in a manner similar to how they would use the actual system. As a result, design deficiencies were easily identified, and the potential of pursuing solutions that were not useful or viable was reduced.

## Technical Requirements

Once the modified prototype was approved by ICBF, D4I prepared the technical requirements for the Demographic Information and Initial Evaluation section. Technical requirements are detailed specifications that explain how to implement the proposed changes in a system. These specifications serve as a roadmap for developers, ensuring that the changes are executed in SIM in a manner consistent with the changes identified by the users. At DIT's request, ICBF's template was used to document the technical requirements.

D4I included the interactive prototypes in the technical requirements. As functional prototypes, they enriched the technical requirements, offering tangible and practical insights into the requested changes.

The technical requirements were developed by D4I, then reviewed by the Protection Directorate team, who worked with DIT, the Planning Directorate and other offices to validate them. Based on their feedback, D4I submitted an updated version of the requirements to DIT. After numerous consultations and reviews by the Protection Directorate and DIT, the final version of the requirements was produced, which DIT will use to develop the changes to the software.

## Summary of Results

This phase of the methodology was replicated for the three other sections. A total of 18 technical requirements covering 256 pages were developed to address the user stories. By section, the 18 requirements were distributed as follows: Demographic Information and Initial Evaluation (33%), Verification of Rights and PARD (39%), Nutritional Assessment (11%), and Record of Legal and Administrative Actions (6%). The remaining 11 percent applied to all four sections.

## Lessons Learned

- For complex prototypes, D4I recommends using interactive prototypes instead of static wireframes. The experience of D4I was that the interactive prototypes streamlined the development of the

technical requirements because they helped clarify functionality, identify limitations, facilitate collaboration among teams, and validate the viability of the proposed changes.

- The visual clarity that the prototypes provided helped the software development team to precisely identify the design expectations. It is also expected that the prototypes will guide programmers to implement the changes in SIM with a high degree of accuracy.

## Next Steps

The next steps involve the software programming, testing, and deployment of each of the four redesigned sections of the Beneficiary Module. The specific steps for each section are:

1. DIT programs the changes using the technical requirements and mockups provided by D4I.<sup>7</sup> This began on August 8, 2023.
2. DIT tests the changes implemented to ensure they are working as specified in the technical requirements and that there have been no unanticipated effects on other aspects of SIM.
3. The Protection Directorate conducts user acceptance testing to ensure the changes have been implemented as intended by the users. This should entail completing specific tasks in the system, based on the user stories. The members of the user group are key participants in this activity.
4. DIT implements any changes resulting from the user acceptance testing and conducts its routine pre-deployment activities.
5. ICBF communicates the changes to end users.
6. ICBF conducts training for existing users about the revisions. The training curriculum for new users is updated to reflect the changes.
7. After the changes have gone live, DIT and the Protection Directorate monitor the implementation of the changes. This could include activities such as obtaining feedback from users, reviewing data quality, and assessing whether the changes have impacted the overall performance of SIM.

## Conclusion

The methods described in this report were shown to be well suited to the redesign of the four selected sections of the Beneficiary Module in SIM. After initial training about the concept of usability and the tools such as customer journey mapping, user stories, and Adobe XD, the members of the user group were able to implement the methods and tools without difficulty. D4I posits that users had little difficulty understanding the methods because they mostly required the users to explain their day-to-day work activities and what they need the system to do in order to be able to support these activities. In contrast, alternative methods may rely on users to specifically explain what needs to be changed in the system. While these methods are usually suitable for minor design changes, they may be less effective when extensive redesign is needed, which was the case for each of the four sections of the Beneficiary Module except Record of Legal and Administrative Actions.

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<sup>7</sup> DIT has an established protocol for testing and implementing changes in SIM. This list only provides general references to those steps.

Having a user group with stable membership proved important, not only because it allowed users to become adept with using the methodology, but also because it fostered cohesive design across the four sections. The users continuously related their decisions to previous decisions they had made for other sections. Another benefit of having stable members was that the trust built among the group members promoted healthy debate in the plenary sessions, which ultimately improved decision making.

The diverse composition of the user group proved critical. In addition to having representation geographically and by profession, it is also important to have group members that have a range of experiences with the information system. New users bring an important perspective because they have not yet fully acclimated to the system. On the other hand, veteran staff offered deep knowledge of SIM and ICBF policy, as well as direct experience with the wide array of situations that frontline staff may encounter in supporting children and their families. Such knowledge and experience were essential to ensure the requirements and the design decisions were valid and complete.

The user research conducted early in the project (i.e., interviews, survey, focus groups, and on-site visits) were instrumental not only in determining where to focus the work within the Beneficiary Module, but also to prepare D4I to facilitate this work. Specifically, these activities gave D4I an opportunity to gain knowledge of SIM as well as the *defensoría* teams and the challenges they faced using the system. D4I also learned about ICBF as an institution, particularly the work of the Protection Directorate. The initial research took longer than anticipated. However, the information that resulted from these inquiries put the project on solid footing and gave ICBF and D4I confidence that their resources were being dedicated to the appropriate activities. D4I concluded that the initial time investment was recouped in subsequent steps of the process, beginning with the workshops.

The execution of the methodology described in this report requires a significant investment of time from the client/stakeholder, which ICBF provided (in the absence of this commitment, alternative methods should be considered). D4I staff believe that the technical staff in the Protection Directorate who were closely involved in the project are now prepared to facilitate the revisions to other sections of the Beneficiary Module. They are prepared to implement various types of user research as well as customer journey mapping and user stories. With assistance from DIT, they could also create the prototypes, while it would be most practical for DIT to develop the technical requirements.

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## Appendix A. Example of a Task for Users to Test a Prototype

### EDIT DATA (Describe the gender with which the child self-identifies)


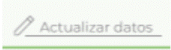

#### What to do:

Change the answer option for the gender with which the beneficiary identifies with.

#### Why:

Stacey does not identify as a female, so we need to update her information.

#### How:

1. Update the data by changing the answer option in the gender field from "Female" to "Other".
2. Describe the specific gender and save the update. (In the exercise, the name of the other gender automatically appears, but in a real scenario, it should be filled in to proceed.)
3. Save using the "save button" at the top of the screen. 
4. Click the edit button at the top of the screen to do the exercise again since you realized that you entered the incorrect answer. 
5. Update the data by changing the answer option in the gender field from "Other" to "Transgender".
6. Select the option for transgender "Transgender man"
7. Save using the "Save button" at the top of the screen. 

Follow the steps to complete this task within the mockup.

Please indicate your satisfaction level by placing an 'X' on the face that best represents your experience.



Don't forget to enter your feedback while performing the task using Adobe XD comments tool.

## Appendix B. Links to Interactive Prototypes

- **Demographic Information and Initial Evaluation:** <https://xd.adobe.com/view/d3c7e97b-afa5-4887-b99b-47629c054dc9-8694/?fullscreen>
- **Verification of Rights and PARD:** <https://xd.adobe.com/view/90743c33-1b0e-41cc-9160-27fa5eb95186-c527/?fullscreen>
- **Nutritional Assessment:** <https://xd.adobe.com/view/fce26fed-6f0b-4a7c-ae07-301bc21b977a-a9b1/?fullscreen>
- **Record of Legal and Administrative Actions:** <https://xd.adobe.com/view/722f3bba-991f-4644-b127-cdc38faed159-277c/?fullscreen>



### **Data for Impact**

University of North Carolina at Chapel Hill  
123 West Franklin Street, Suite 330  
Chapel Hill, NC 27516 USA

Phone: 445-919-6949

D4I@unc.edu

<http://www.data4impactproject.org>



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