

Skrining Assist Information System v3.1 at the National Narcotics Agency of Sidoarjo Regency

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Abstract. The Screening Assist Information System v3.1 is a web-based application designed to support the substance abuse screening process at the National Narcotics Agency (BNN) of Sidoarjo Regency. This system uses the ASSIST (Alcohol, Smoking and Substance Involvement Screening Test) method from the WHO as an early detection tool for substance use risks. The system was developed using a Research and Development (R&D) approach with the Waterfall model in the System Development Life Cycle (SDLC). This information system was created using the PHP programming language and Mysql database. With its time efficiency, scoring accuracy, and data security, this system is an effective digital solution in supporting efforts to prevent and combat drug abuse in the Sidoarjo Regency. The system evaluation was conducted using the Blackbox Testing method, which showed that all features functioned properly, and the User Acceptance Testing (UAT) method was used to measure user satisfaction with a result of 87.6% . This percentage reflects the expectation that students provided honest answers, so that the data obtained was close to the actual level of validity. Overall, the evaluation results indicate that the developed information system can serve as an effective, adaptive digital solution that supports professional and structured efforts to prevent and address drug abuse.

Keywords: Screening; Assist v3.1, Waterfall Method, Website, PHP Mysql, Blackbox Testing, UAT Testing

1 Introduction

Drug abuse is a serious problem in many countries, including Indonesia. To implement Law Number 35 of 2009, the President issued Presidential Regulation Number 23 of 2010 concerning the National Narcotics Agency (BNN) [1]. BNN is a non-ministerial government agency under the direct authority of the President. As a measure to combat the drug problem, the government also issued Presidential Instruction No. 12 of 2011 concerning the Implementation of National Policies and Strategies for the Prevention and Eradication of Drug Abuse and Illegal Drug Trafficking (P4GN). This Presidential Instruction covers four main areas, namely: 1) prevention, 2) community empowerment, 3) rehabilitation, and 4) eradication [2].

Field Intervention Screening (SIL) was conducted using the ASSIST v3.1 (Alcohol, Smoking, and Substance Involvement Screening Test V3.1) form, which is still in physical document form. The form was filled out through direct interviews with patients, where counselors checked each question point according to the answers given. The results of these interviews are then calculated manually by counselors based on the scores for each group of questions.

A good information system can be an effective tool for collecting and analyzing data related to drug abuse. With accurate data, the BNN can formulate more targeted and evidence-based policies. This study aims to design and implement a screening information system that can be used by the Sidoarjo District BNN to monitor and evaluate interventions carried out in the field. This is in line with research showing that a data-based approach can increase the effectiveness of drug abuse prevention programs [3].

This screening information system will also consider a psychoeducation approach that has been proven effective in increasing awareness and knowledge about drug abuse [4]. Through data integration and psychoeducation interventions, the BNN can identify vulnerable groups that require more attention and design appropriate intervention programs. Research shows that interventions involving the community can increase the success of rehabilitation programs [5].

Several previous studies have been conducted in the development of web-based information systems to support drug rehabilitation services. [6] developed an application for processing medical records of rehabilitation patients at the West Java BNNP. This study is relevant in improving the effectiveness of early detection and treatment of

substance abuse, particularly through the integration of ASSIST v3.1 screening results with a web-based medical record system. [7] developed a rehabilitation data information system at the Pematangsiantar National Narcotics Agency (BNNK), which showed that integrating screening results into the rehabilitation system can improve the accuracy of interventions and data-based decision making. Meanwhile, [8] evaluated the SIRENA drug rehabilitation information system using the HOT-FIT method to assess the suitability of human, organizational, and technological aspects in supporting national resilience. Furthermore, [9] researched the implementation of a digital-based clinic management system (assist.id) at the Albar Primary Clinic, which showed the important role of information systems in supporting administration, medical records, and screening services. Finally, [10] developed a web-based rehabilitation registration information system at the Palembang Police Headquarters to overcome manual registration obstacles, which is relevant in building a more efficient and integrated service system with ASSIST v3.1 screening. These various studies show the importance of integrating screening systems with rehabilitation information systems to improve the effectiveness and efficiency of drug rehabilitation services.

Based on this background, it can be concluded that the implementation of the ASSIST v3.1 information system can assist counselors by increasing time efficiency and speeding up services. This is because the scoring process is done digitally, making it more accurate and reducing the use of paper (paperless). In addition, this system also provides a more secure data storage and allows for faster information retrieval compared to manually checking documents one by one. The results of this study will not only provide new insights into drug abuse, but can also serve as a basis for better decision-making in tackling this problem at the local level. Therefore, it is important to involve various stakeholders, including local governments, educational institutions, and the community, in the process of developing and implementing this information system [11].

2 Methods

2.1 Research Methods

Research methods are techniques applied in data collection and data analysis [12]. To ensure more comprehensive data, this study used a combination of research methods, with quantitative data collection through the ASSIST v3.1 information system and qualitative data collection as a supplement.

2.2 System Development Method

This study uses a Research and Development (R&D) approach by applying a system development model based on the System Development Life Cycle (SDLC). SDLC is a structured framework that represents the stages in the system design and development process [13]. This model provides systematic procedures used in information system development, making it very suitable for use in the creation of the ASSIST v3.1 information system. In this study, the software development process was carried out using the Waterfall SDLC model, which has a sequential, structured, and systematic flow [14].

The Waterfall model, also known as the classic life cycle or sequential linear model, offers a systematic and sequential approach to software development. In this model, each stage of the process takes place gradually, with a structured downward flow, resembling a waterfall (Pressman, 2015) as shown in Figure 1.

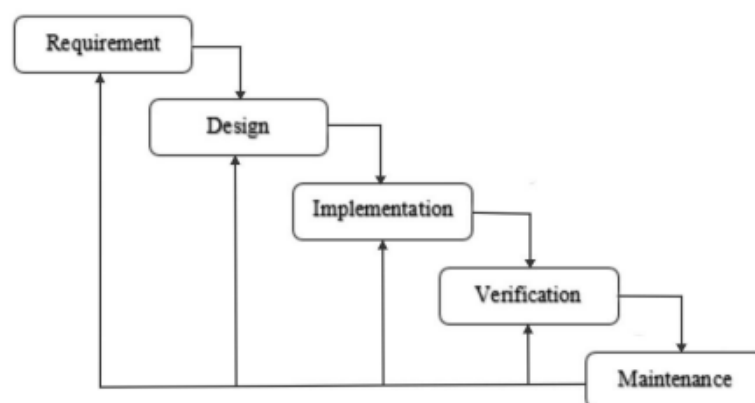


Figure 1. Waterfall Method

This model consists of five main stages that are carried out sequentially, namely:

a. Requirement (Needs)

In this stage, requirements are gathered from users or stakeholders. All information needed for the system is recorded completely and clearly, including both functional requirements (what the system must do) and

non-functional requirements (such as security, performance, etc.). The result of this stage is a system requirements specification document.

b. Design

This stage aims to convert the collected requirements into an implementable system design. This process includes designing the system architecture, database structure, interface display, and process logic design. The system design is as follows:

1. Flowchart

In this study, the flowchart of the application to be developed is as follows:

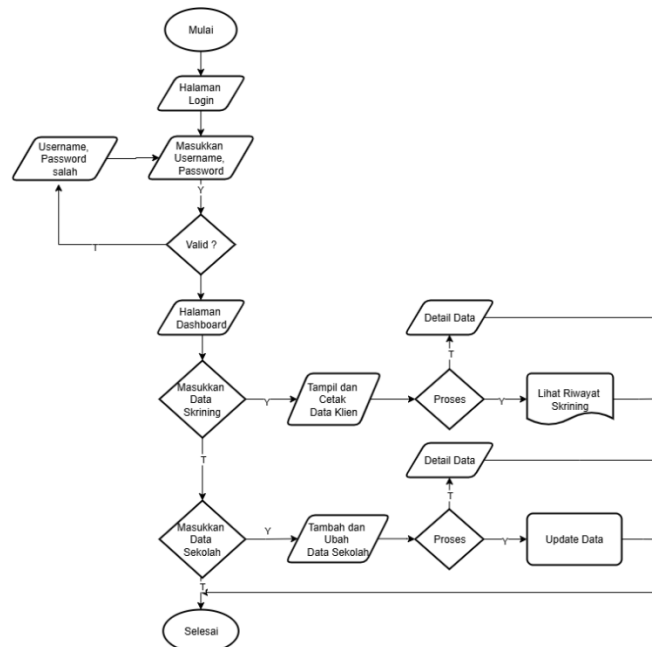


Figure 2. Flowchart Admin

Figure 2 above shows that the admin starts by entering a username and password. The system checks the username and password. If the username and password are correct, the user will be directed to the user dashboard page. If the username and password do not match, an error message will appear. On this page, the admin can manage the screening data and school data menus.

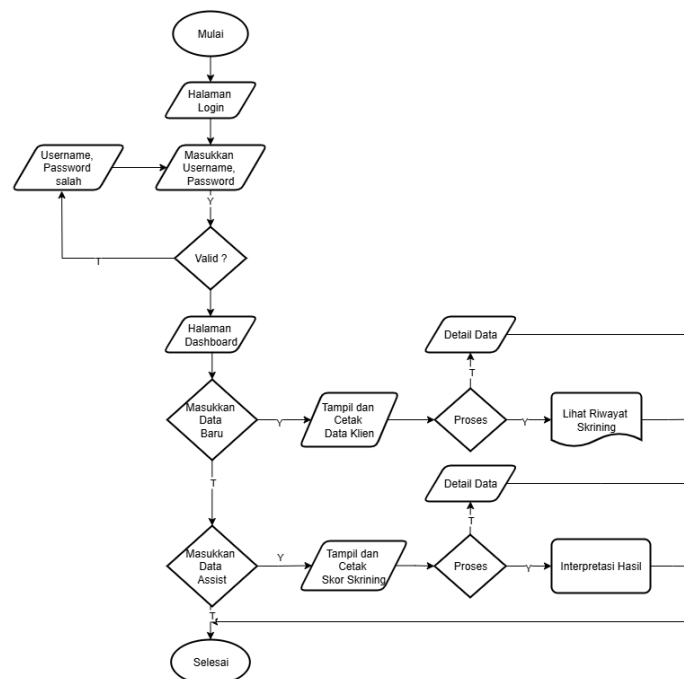


Figure 3. Flowchart User

The user flowchart explains that once a user has been registered by the admin, they can log into the system. Users can fill out the assist form for clients and manage client data.

2. Data Flow Diagram (DFD)

DFD is a data logic or process model created to describe where data comes from and where it goes out of the system, where it is stored, how it is generated, the relationship between stored data, and the processes applied to the data [15]. The following is an explanation of the process flow of the ASSIST v3.1 screening information system, which is illustrated using a diagram called a Data Flow Diagram or DFD. Below is the DFD of the ASSIST v3.1 screening information system.

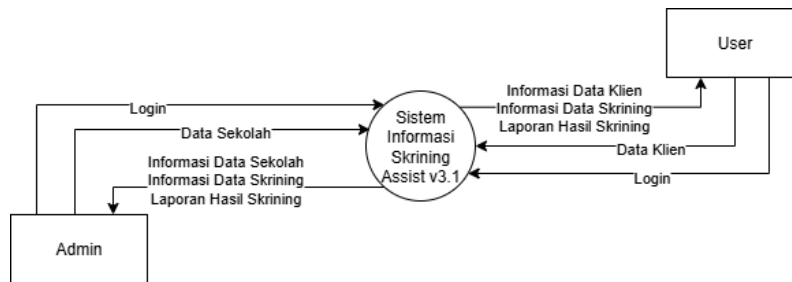


Figure 4. Level 0 Data Flow Diagram

Figure 4 explains the Level 0 Data Flow Diagram of the ASSIST v3.1 screening information system. The user inputs client data into the system. The system then outputs client data, screening data, and screening results reports to the administrator, who then inputs school data into the system.

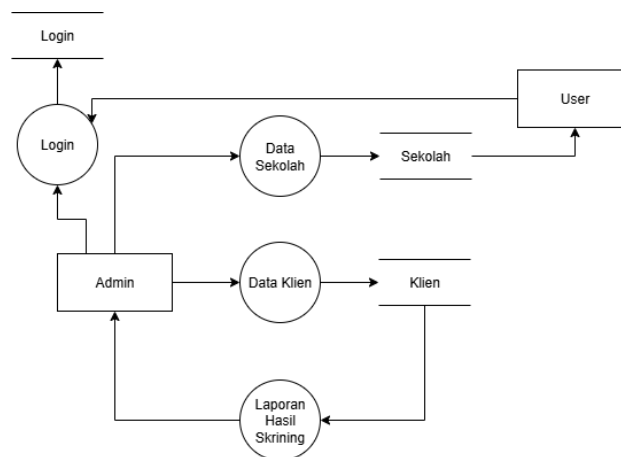


Figure 5. Level 1 Data Flow Diagram

Figure 5 illustrates the Level 1 Data Flow Diagram. Based on this DFD, it is evident that users input client data. Administrators receive the inputted client data and can view it. The processing of client data results in an output in the form of a client screening report that can be accessed by administrators.

3. Database Table Relationships

Database table relations are the relationships between database tables and other database tables. There are three types of database table relations [16]:

- One to many is a relationship that explains that one field from a database table has a lot of data in other database tables.
- Many-to-many is a relationship that explains that of the many fields in the database, there is a lot of data with other tables.
- One-to-one is a relationship that describes that one field in a table has one data field in another database table.

The following is an illustration of the relationship between database tables used in the ASSIST v3.1 screening information system research.

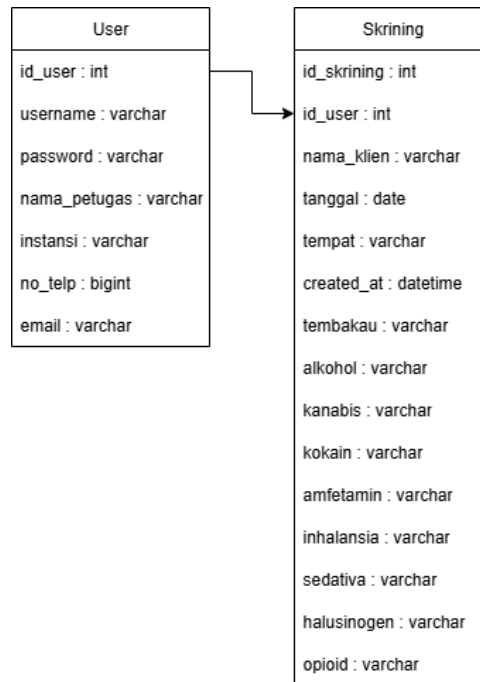


Figure 6. Database Table Relationship

Figure 6 shows the relationship between two tables in the database, namely the User table and the Screening table. This relationship is used in a user-based screening system that connects officer data with client screening results data.

Table 1. User

No	Field Name	Data Type	Length	Constraint
1	id_user	int	11	PK
2	username	varchar	255	
3	password	varchar	255	
4	staff_name	varchar	255	
5	institution	varchar	255	
6	phone_number	bigint	20	
7	email	varchar	255	

Table 1 stores data on system officers or users, consisting of id_user, which is *the Primary Key*, the unique identity of each user/officer, username, password, officer_name, agency, and mo_telp.

Table 2. Screening

No.	Field Name	Data Type	Length	Constraint
1	screening_id	Int	11	PK
2	user_id	int	11	
3	client_name	varchar	255	
4	date	date		
5	place	varchar	255	
6	created_at	datetime		
7	tobacco	varchar	255	
8	alcohol	varchar	255	
9	cannabis	varchar	255	
10	cocaine	varchar	255	
11	amphetamine	varchar	255	
12	inhalants	varchar	255	

13	sedatives	varchar	255
14	hallucinogens	varchar	255
15	opioid	varchar	255

Table 2 stores the screening results for clients conducted by officers, where *id_skrining* is the *Primary Key*, the unique identity for each screening process, and *id_user* is the *Foreign Key* that refers to *id_user* in the User table. The relationship between the User and Skrining tables is *one-to-many*, meaning that one officer (User) can conduct many screenings (Skrining), but one screening is only conducted by one officer.

c. Implementation

After the design is complete, developers begin writing program code based on the design. This stage produces functional software, where each module is unit tested to ensure that every part of the system runs according to its intended function.

d. Verification

This stage involves testing the system as a whole, from module integration and functionality testing to validating that the system meets user requirements as defined in the initial stage. Common methods used in this stage are system testing and user acceptance testing.

e. Maintenance

After the system is used by users, bugs may be found or additional development may be required. This stage includes maintenance, bug fixes, performance improvements, and adjustments to new requirements. A good system should be easy to maintain and further develop.

2.3 Data Collection and Score Calculation Methods

The scoring process is carried out by users by asking respondents to answer the ASSIST v3.1 questionnaire digitally, which consists of 8 questions that can identify issues and problems related to substance use, such as acute intoxication, regular use, and injecting behavior. The system then automatically processes the answers into an ASSIST score for each substance, which is used as a reference for further action, namely brief intervention or rehabilitation assessment [17].

Quantitative data from these scores will be combined with in-depth interviews and behavioral observations of respondents to obtain a more comprehensive picture of the factors that influence the risk of abuse. The honesty of respondents is very important, so the questionnaire is filled out in a supportive atmosphere so that respondents feel comfortable and honest in their answers.

2.4 System Requirements Analyst

2.4.1 Functional Requirements

Functional requirements are the main features or functions that a system must have in order to perform its tasks according to its objectives, as follows:

- Login is the first step to enter the system (for BNNK Sidoarjo users and administrators) and manage various data systems, including user data, client data, and client screening results data.
- The Dashboard page displays the default page, where upon logging into the application, users and admins will see different default pages.

2.4.2 Non-Functional Requirements

Non-functional requirements are system quality requirements, not direct features, but are crucial for performance and reliability. The following are the non-functional requirements of this information system:

- Hardware Requirements
 - HP laptop (4GB RAM)
 - 300 GB SSD
 - Internet connection
- Software Requirements that assist in the development of this system are:
 - Windows 10 operating system
 - Text Editor (Visual Studio Code)
 - XAMPP is used to provide a local server, PHP, and MySQL [18]
 - PHP is a server-side programming language designed for dynamic web development [18]
 - MySQL is an open-source relational database management system (RDBMS) that is widely used for web-based applications [18]

3 Results and Discussion

3.1 Requirements

At this stage, observations and interviews were conducted with the Sidoarjo District National Narcotics Agency to identify user requirements. The results of the analysis showed that a system was needed that was capable of:

- Screen substance use based on the WHO's ASSIST v3.1 instrument.
- Calculate risk scores automatically and accurately.
- Store and manage client data securely.
- Provide a print feature for client feedback cards.

This system requirements document forms the basis for the design of the application's functions.

3.2 Design

The design phase involves developing the system structure, user interface, and database design. The database is designed to store client data, screening results, and system user information (BNN officers). The interface is web-based and uses the TailwindCSS framework for a responsive and user-friendly display. This design ensures simple navigation and instructions that are easy for users to understand.

3.3 Implementation

The ASSIST v3.1 screening information system has two user access rights, namely as an admin and a user, which is the access right of an agency to perform screening using this system. This application has the following appearance:

- Login Page

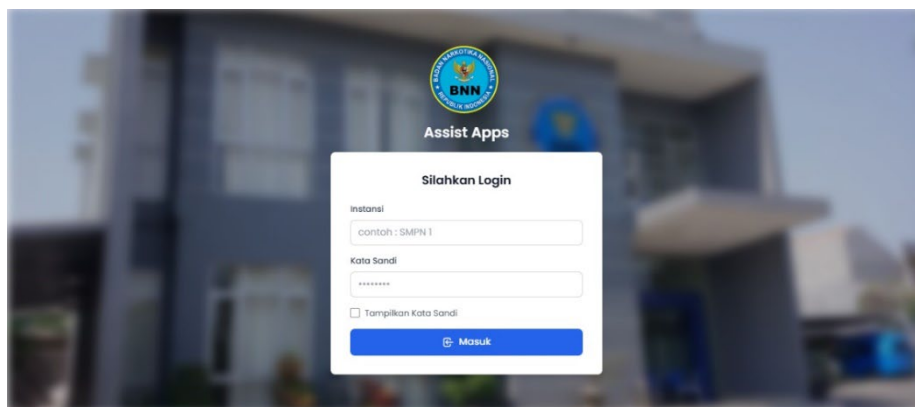


Figure 7. Login Page

Figure 7 shows the login page, which is used to determine access to the system and identify who is logging into the system. There is a login button that allows users to log into the system by entering their username and password.

- Dashboard Page



Figure 8. Dashboard Page

Figure 7 shows the dashboard page, which displays bar graphs illustrating the level of use of various types of substances based on the results of screening clients. This graph groups data based on risk level, namely: Low Risk (marked in green), Medium Risk (yellow), and High Risk (red). The types of substances displayed include Tobacco, Alcohol, Cannabis, Cocaine, Amphetamines, Inhalants, Sedatives, Hallucinogens, and Opioids.

c. Client Data Page

NO	NAMA PETUGAS	INSTANSI	NAMA KLIEN	TANGGAL PERIKSA	ALAMAT	AKSI
1	Hermansyah, S.K.M	Klinik BNNK Sidoarjo	Dadang Priyo Utomo	10 Mei 2024	Sidoarjo	[PDF] [Print]
2	Nita Prinda Sari, S.Psi	Klinik BNNK Sidoarjo	M. Ainun Nazib	29 April 2024	Sidoarjo	[PDF] [Print]
3	Dian Tri Agustinah, S.Psi	Klinik BNNK Sidoarjo	Heru	26 April 2024	Sidoarjo	[PDF] [Print]
4	Hermansyah, S.K.M	Klinik BNNK Sidoarjo	Moh. Rifai	12 April 2024	Sidoarjo	[PDF] [Print]
5	Nita Prinda Sari, S.Psi	Klinik BNNK Sidoarjo	Eko Budi	3 Februari 2025	Sidoarjo	[PDF] [Print]
6	Vivin Elvanita, S.K.M	SMK YPM 2 Taman	Ananda Ade Rafi M.	9 November 2024	Sidoarjo	[PDF] [Print]
7	Hermansyah, S.K.M	SMK YPM 2 Taman	Moh. Harlan Mahera	9 November 2024	Sidoarjo	[PDF] [Print]
8	Dian Tri Agustinah, S.Psi	SMA Antartika Sidoarjo	Danang Faturrohman	8 November 2024	Sidoarjo	[PDF] [Print]

Figure 9. Client Data Page

Figure 9 displays the Client Data page from the *Form Assist v3.1* application, which can only be accessed by the Sidoarjo BNNK admin. This page serves as an information center that displays a list of clients who have undergone substance abuse screening using this application. In the table, the administrator can see data including the name of the examiner, the originating agency, the client's name, the date of the examination, and the client's address. In addition, there is an action column on the right that provides buttons to view screening results in detail or print the results report in pdf format. The search feature at the top of the table makes it easy for administrators to find the desired client data based on name, officer, or agency. This page supports efficient and structured data management, allowing administrators or officers to quickly review inspection histories and follow up according to the screening results that have been carried out.

d. Institution Data Page

NO	INSTANSI	EMAIL	NO TELEPON	AKSI
1	Klinik BNNK Sidoarjo	klunik@bnn.co.id	08814978565	[PDF] [Print] [Delete]
2	Pompes Islamiyah	pompes.islamiyah@gmail.com	0318923461	[PDF] [Print] [Delete]
3	SMPN 3 Krian	smnp3krian@gmail.com	0318971540	[PDF] [Print] [Delete]
4	SMK YPM 2 Taman	ypm2smk@gmail.com	0317875230	[PDF] [Print] [Delete]
5	SMA Antartika Sidoarjo	humas@smaantarda.sch.id	0318963950	[PDF] [Print] [Delete]
6	SMK PORI 2 Sidoarjo	smkpgr2sidoarjo@yahoo.co.id	0318949600	[PDF] [Print] [Delete]
7	MTSS DARUL HIKMAH	mtssdarulhikmah@gmail.com	085749566566	[PDF] [Print] [Delete]

Figure 10. Agency Data Page

Figure 10 shows the Agency Data page in the *Form Assist v3.1* application used by BNNK Sidoarjo. This page serves as a center for managing data on agencies involved in screening, such as schools, clinics, and other institutions. On this page, administrators have full control to manage agency data, including features to add new users (user register), change agency information, and delete agencies from the system.

e. Dashboard Page



Figure 11. Dashboard Page

Figure 11 shows the user dashboard page of the *Form Assist v3.1* application with a graphic display that presents the level of use of various types of substances based on three risk categories, namely Low Risk (green), Medium Risk (yellow), and High Risk (red). This graph is displayed in bar form and presents data based on substance type, such as Tobacco, Alcohol, Cannabis, Cocaine, Amphetamines, Inhalants, Sedatives, Hallucinogens, and Opioids. This page is part of the user account originating from a specific institution based on the logged-in user.

f. Form Assist v3.1 Page

Figure 12. Form Assist v3.1 Page

Figure 12 shows the Form Assist v3.1 page used in the initial screening process for clients. This page contains an examination form designed to conduct direct interviews with clients regarding their history of using various types of psychoactive substances, outside of medical use. This form contains input fields such as Officer Name, Client Name, Date of Examination, and Address. Below that, there is a list of questions related to substance use, such as Tobacco Products and Alcoholic Beverages, with the answer options "Ever" or "Never". Each answer will be used as a basis for calculating the client's substance use risk score, which will then be classified as low, medium, or high risk.

g. Data Assist Page

NO	NAMA PETUGAS	NAMA KLIEN	TANGGAL PERIKSA	ALAMAT	AKSI
1	Hermansyah, S.K.M	Dadang Priyo Utama	10 Mei 2024	Sidoarjo	[Icons]
2	Nita Prinda Sari, S.Psi	M. Ainun Nazib	29 April 2024	Sidoarjo	[Icons]
3	Dian Tri Agustina, S.Psi	Heru	26 April 2024	Sidoarjo	[Icons]
4	Hermansyah, S.K.M	Moh. Rifai	12 April 2024	Sidoarjo	[Icons]
5	Nita Prinda Sari, S.Psi	Eka Budi	3 Februari 2025	Sidoarjo	[Icons]
6	Bu Nella	Suparman	6 Juli 2025	Sidoarjo	[Icons]
7	Prinda	Indra	6 Juli 2025	Sidoarjo	[Icons]

Figure 13. Data Assist Page

Figure 13 shows the Data Assist page in the *Form Assist v3.1* application. This page serves as a center for managing client screening results based on interviews conducted using the ASSIST instrument. The table displayed contains important information such as serial number, officer name, client name, date of examination, and client address. In the action column on the right, there are several functional buttons, including view screening results, edit data, delete data, and download screening results. The download results are in the form of client feedback cards, which are used as official documents to follow up on screening results, either in the form of referrals, education, or further intervention according to the client's risk level.

h. Score Interpretation Page

RENTANG SKOR	KATEGORI RISIKO	MAKNA SKOR	TINDAKAN YANG DISARANKAN
0 - 3	Rendah	Berada pada tingkat risiko berdasarkan pola penggunaan zat yang digunakan saat ini.	Edukasi ringan oleh petugas skrining dan pemantauan berkala.
4 - 26	Sedang	Sudah berisiko mengalami masalah kesehatan dan masalah lain berdasarkan pola penggunaan zat yang digunakan saat ini.	Intervensi singkat, konseling, atau rujukan ke layanan pendukung.
> 27	Tinggi	Berada pada tingkat risiko tinggi untuk mengalami masalah yang serius (kesehatan, sosial, keuangan, hukum, hubungan sesama) sebagai akibat pola penggunaan zat yang digunakan saat ini dan mungkin juga mengalami ketergantungan.	Intervensi intensif, rehabilitasi, atau asesmen lanjutan oleh tenaga profesional.

Figure 14. Score Interpretation Page

Figure 14 shows the score meaning page, which provides information and explanations about the meaning of the scores that appear from the interview results, making it easier for users to follow up on the next actions to be taken with the client.

3.4 Verification (Verification and Testing)

3.4.1 Blackbox Testing

After the program underwent several tests, the system testing procedure was carried out. Black box testing is a procedure for testing information systems, because it only takes the upper and lower limits of the anticipated data, black box testing is easy to apply [19]. Checks were carried out during this procedure to identify errors that could occur.

Table 3. System Testing

No	Test Class	Testing Details	Test Results
1	Application Login	Verify login data by entering username and password	Successful
2	Dashboard Menu	Display graphs of usage levels for various types of substances based on three risk categories	Success
3	Client Menu	Search, view, and print data	Success
4	Institution Menu	Search, register/add, view, edit, and delete data	Success
5	Form Assist v3.1	Fill out the form and save the data	Success
6	Assist Menu	Search, view, edit, delete, and print data	Success
7	Score Meaning Menu	Display the score meaning page about the meaning of the score that appears	Success

Based on the system test results listed in Table 3, it can be concluded that all major components in the Form Assist v3.1 application are functioning as intended. Testing was conducted on seven main features, and overall, all core features in the Form Assist system have been tested and showed "successful" results. This proves that the

system is ready to be used in the screening, data collection, and reporting processes by BNN Sidoarjo Regency officers effectively and efficiently.

3.4.2 UAT (User Acceptance Test) Testing

After the system testing was carried out, the UAT testing was conducted through an assessment by users to fill out a questionnaire about their assessment of the ASSIST v3.1 screening information system. This testing was carried out on 10 respondents consisting of several agencies. Each question had 5 answer options, including Strongly Agree (SS), Agree (S), Neutral (N), Disagree (TS), and Strongly Disagree (STS) [20]. The UAT test results can be seen in Table 4.

Table 4. UAT Testing

Question	Responses					Number of Respondents	Percentage
	SS	S	N	TS	STS		
This system has an attractive and easy-to-understand display	8	2				10	96
This system uses easy-to-use menu navigation	7	3				10	94
All menus in this system work well.	10					10	100
The system instructions are clear and easy to follow.	5	5				10	90
The data input process runs smoothly without any obstacles.		10				10	80
The data search feature works well.		10				10	80
The report/screening results card printing feature is very helpful		10				10	80
The screening form meets field requirements		10				10	80
The graphs on the dashboard help me understand the level of substance use among clients.	8	2				10	96
The information on the meaning of the scores is very useful in following up with clients.		10				10	80
Average Score							87.6

Based on the questionnaire results from 10 respondents, the majority of users gave positive reviews of the application. Overall, the application received an average satisfaction rating of 87.6%, indicating that users rated it very highly.

After the system was implemented, regular maintenance was carried out to ensure that the system continued to run optimally. Several suggestions from users, such as adding a statistical graph feature for screening results and integration with the rehabilitation system, have been planned for the next stage of development. This system is designed with a modular structure to facilitate the process of modification and feature enhancement in the future.

4 Conclusion

Based on the results of system testing and user responses to the ASSIST v3.1 Screening Information System application, it can be concluded that this system has performed as expected. All major features, such as application login, dashboard menu, client and agency data management, as well as the ASSIST form and score interpretation features, have been successfully tested and showed "successful" results without any significant obstacles.

Additionally, based on questionnaires filled out by 10 respondents, the majority of users gave positive responses regarding the appearance, ease of navigation, clarity of instructions, and completeness of features in the application. With an average user satisfaction score of 87.6%, the application is considered excellent and suitable for use in screening, data collection, and follow-up processes by BNNK Sidoarjo personnel. This indicates that ASSIST v3.1 is effective and efficient in supporting the implementation of technology-based screening services.

Acknowledgments

The author would like to express gratitude and thanks to Allah Subhanahu Wa Ta'ala for His mercy, and to the family who always provided support so that the author could complete this research. Appreciation is also given to Muhammadiyah University Sidoarjo, which has been a source of knowledge in the development of the ASSIST v3.1 screening information system at the Sidoarjo District Narcotics Agency. The author would like to express their deepest gratitude to the supervising lecturers who have provided assistance and guidance in the development of this research, enabling the author to complete it. Their contributions have been invaluable to the successful completion of this research.

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